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U.S. GOVERNMENT RESEARCH REPORTS

U.S. DEPARTMENT OF COMMERCE
Luther H. Hodges, Secretary

OFFICE OF TECHNICAL SERVICES

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AD-298 299 DIV. 25

DYNAMIC NON-LINEAR WAVE PROPAGATION IN IONIZED MEDIA.
AD-298 568 DIV. 9

***ELECTROMAGNETIC WAVES**
RADIATION HAZARDS

GUIDED MISSILE PROPULSION SYSTEM, HAZARDS OF ELECTROMAGNETIC RADIATION TO ORDNANCE (HERO): RF CHARACTERISTICS OF ELECTRO-EXPLOSIVE DEVICES (EED).
AD-299 317 DIV. 27

GUIDED MISSILE PROPULSION SYSTEM, HAZARDS OF ELECTROMAGNETIC RADIATION (HERO): RF CHARACTERISTICS OF ELECTRO-EXPLOSIVE DEVICES (EED).
AD-299 318 DIV. 27

***ELECTROMAGNETIC WAVES**
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SCATTERING OF ELECTROMAGNETIC WAVES BY AN ANISOTROPIC MEDIUM WITH A HARMONICALLY TIME-VARYING DIELECTRIC TENSOR.
AD-298 299 DIV. 25

***ELECTRON BEAMS**

THE PAIRWISE COUPLING OF THE MODES IN ELECTRON BEAM AND OTHER DEVICES IS TREATED. THE OBJECTIVE IS TO ESTABLISH A TECHNIQUE FOR MAPPING THE EFFECT OF THE SEPARATE SECTIONS OF THE DEVICE IN

SUCH A WAY THAT THE QUALITATIVE BEHAVIOR OF THE SYSTEM AS A WHOLE CAN BE INFERRED DIRECTLY. THE RESULT IS WHAT WE CALL THE TOPOLOGICAL DIAGRAM OF THE SYSTEM.
AD-298 905 DIV. 25

*ELECTRON BEAMS
PLASMA PHYSICS

INVESTIGATION OF ELECTRON-BEAM INTERACTION WITH A BEAM-GENERATED PLASMA.
AD-298 698 DIV. 20

ELECTRON AND ION BEAMS ARE SYNTHESIZED IN TUBES UTILIZING HOLLOW CATHODE SURFACES: A CONTINUOUS, CURRENT DENSITY OF 70 AMP/SQ. CM. WAS OBTAINED IN PRELIMINARY RESULTS WITH A HIGH POWER, CESIATED HOLLOW CATHODE OPERATED AT 2400 K.
AD-299 267 DIV. 8

*ELECTRON BOMBARDMENT
SCATTERING

THE HYPERVIRIAL THEOREM FOR COLLISION BETWEEN ATOMS AND ELECTRONS.
AD-298 615 DIV. 20

*ELECTRON GUNS
PLASMA JETS

ELECTRON AND ION BEAMS ARE SYNTHESIZED IN TUBES UTILIZING HOLLOW CATHODE SURFACES: A CONTINUOUS, CURRENT DENSITY OF 70 AMP/SQ. CM. WAS OBTAINED IN PRELIMINARY RESULTS WITH A HIGH POWER, CESIATED HOLLOW CATHODE OPERATED AT 2400 K.
AD-299 267 DIV. 8

*ELECTRON GUNS
PROGRAMMING (COMPUTERS)

DIGITAL COMPUTER PROGRAM FOR A TWO-DIMENSIONAL NONLINEAR ANALYSIS OF LARGE SIGNAL TRAVELING WAVE DEVICES. EXPERIMENTAL DATA ON A VARIABLE-PITCH TRAVELING-WAVE AMPLIFIER. NOISE REDUCTIONS IN A BEATING WAVE AMPLIFIER. TECHNIQUES FOR A DEPRESSED POTENTIAL COLLECTOR.
AD-299 010 DIV. 8

*ELECTRONIC SCANNERS
ANTENNAS

THE APPROXIMATION OF LINEAR ARRAY FACTORS. THE LEAST-MEAN-SQUARE COMPARISON OF DIRECTIVITY PATTERNS OF LINE SOURCES HAVING DIFFERENT ILLUMINATION DISTRIBUTIONS IS TREATED.
AD-298 296 DIV. 8

*ELECTROSTATIC GENERATORS
POWER EQUIPMENT

AN ELECTROSTATIC GENERATOR PRODUCED 200 WATTS: EFFORT WAS EXPENDED ON ORGANIC INSULATING COATINGS, ELECTRODE MATERIALS, AND HIGH VACUUM OIL SEALS.
AD-298 641 DIV. 7

*ELLIPSOIDS
AERODYNAMIC CHARACTERISTICS

FORCE ON A PROLATE SPHEROID IN AN AXISYMMETRIC POTENTIAL FLOW.
AD-298 252 DIV. 9

*EMISSIVITY
COATINGS

STABILITY AND EMITTANCE OF MOLYBDENUM DISILICIDE COATING UNDER VARYING TEMPERATURES AND PRESSURES.
AD-299 388 DIV. 14

*ENERGY CONVERSION
SOLAR CELLS

FABRICATING SILICON SOLAR CELLS BY ION IMPLANTATION TECHNIQUES.
AD-298 681 DIV. 8

*ENERGY CONVERSION
THERMIONIC EMISSION

ADDITIVE THERMIONIC CONVERTER PARAMETRIC INVESTIGATION. ELECTRONEGATIVE ATOMS, DESIGNS, EXPERIMENTAL VERIFICATIONS, AND FUTURE PLANS.
AD-298 666 DIV. 25

*EQUATIONS OF STATE

PHYSICAL CHEMICAL AND HYDRODYNAMIC PHENOMENA THAT TAKE PLACE WHEN A ROCKET IS IGNITED BY A ROCKET-IN-ROCKET TYPE IGNITION SYSTEM.
AD-299 280 DIV. 27

*ERYTHROCYTES
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PHOSPHORYLATED ESTERS SYNTHESIZED IN GHOSTS FROM RIBOSE OF INOSINE HAVE BEEN DETERMINED. THE VALUES REPRESENT AVERAGES FROM FOUR WEEKLY EXPERIMENTS WITH GHOSTS FROM 4 BLOOD DONORS. INOSINE WAS METABOLIZED BY NUCLEOSIDE PHOSPHOROLYSIS AS INDICATED BY A RAPID PRODUCTION OF HYPOXANTHINE AMOUNTING TO 200-250 MICROMOLES PER HOUR PER 10 TO THE 12TH CELLS FOR FOUR (4) HOURS
AD-298 602 DIV. 16

*EXCITATION
MICROWAVES

DC EFFECTS UNDER MICROWAVE EXCITATION OF THIN FERRITE FILMS.
AD-298 504 DIV. 30

*EXHAUST GASES
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AD-298 834 DIV. 10

*EXHAUST GASES
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AD-298 337 DIV. 27

*EXHAUST GASES
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*EXPERIMENTAL DATA

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*EXPERIMENTAL DATA
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AD-298 288 DIV. 15

*EXPLOSIONS
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AD-298 778 DIV. 2

*EXPLOSIVES INITIATORS
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AD-299 253 DIV. 22

*EXPLOSIVES INITIATORS
ELECTRIC WIRE

THE BIBLIOGRAPHY INCLUDES ABSTRACTS OF REPORTS ON EXPLODING CONDUCTOR (EXPLODING WIRES) PHENOMENON PUBLISHED FROM 1774 THROUGH 1961.
AD-299 253 DIV. 22

*EXPLOSIVES INITIATORS
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*EXPLOSIVES INITIATORS
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*FATIGUE (MECHANICS)

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AD-298 969 DIV. 14

*FATIGUE (MECHANICS)
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*FERRITES
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*FERRITES
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*FERROELECTRIC MATERIALS
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*FERROMAGNETISM
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THERMODYNAMIC BEHAVIOUR OF THE HEISENBERG FERROMAGNET.
AD-298 770 DIV. 25

*FIBER OPTICS
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*FIBERS (SYNTHETIC)
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AD-298 336 DIV. 14

*FIELD THEORY

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*FILAMENT WOUND CONSTRUCTION
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*FILM BOILING
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***FLAT PLATE MODELS**
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AD-298 671 DIV. 9

***FLOATS**

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*GUIDED MISSILE DETECTION
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*GUIDED MISSILES (UNDERWATER TO SURFACE)
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*GUN SIGHTS
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FIELD TEST OF A TANK-MOUNTED ENGINEERING LASH UP OF A DAYLIGHT ELECTROVISUAL SIGHTING SYSTEM.
AD-298 908 DIV. 22

*GUNS
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THE NAVAL ORDNANCE LABORATORY CORONA AIR GUN FACILITY, A HIGH VELOCITY ENVIRONMENT SIMULATOR
AD-299 255 DIV. 30

*GYROSCOPES

A SYSTEM FOR BALANCING AND DETERMINING THE TRIM OF FLOAT-TYPE GYROSCOPES WHICH IS CONSTRUCTED WITH AN ANNULAR MAGNETIC CIRCUIT HAVING A SOLENOID.
AD-298 658 DIV. 19

A METHOD OF BALANCING THE FLOAT IN FLOAT-TYPE GYROSCOPE DEVICES IN WHICH A SINGLE WEIGHT HAVING A DENSITY EQUAL TO THAT OF THE LIQUID IS ATTACHED TO THE FLOAT, AND THE FLOAT IS BALANCED FIRST IN THE LIQUID AND THEN IN AIR.
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*HAZARDS
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*HEAT RESISTANT METALS & ALLOYS
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*HEAT RESISTANT PLASTICS
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*PHOTOGRAMMETRY

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***PIEZOELECTRIC EFFECT**

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AD-299 259 DIV. 8

***PIEZOELECTRIC TRANSDUCERS**
CERAMIC MATERIALS

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***PIONS**

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AD-299 108 DIV. 20

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AD-298 932 DIV. 8

***PLASMA JETS**
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***PLASMA OSCILLATIONS**
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***PLASMA PHYSICS**

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AD-298 965 DIV. 25

***PLASMA PHYSICS**
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ANALYSIS OF THE TRANSITION BETWEEN A UNIFORM PLASMA AND ITS CONFINING MAGNETIC FIELD.
AD-298 643 DIV. 25

***PLASMA PHYSICS**
BEAMS (ELECTROMAGNETIC)

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AD-298 698 DIV. 20

***PLASMA PHYSICS**
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AD-298 984 DIV. 26

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AD-299 259 DIV. 8

***POLARIZATION**
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AD-298 965 DIV. 25

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***POLYMERS**
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AD-298 955 DIV. 4

***POLYMERS**
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AD-298 215 DIV. 25

***POLYMERS**
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AD-299 308 DIV. 4

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***POLYVINYL CHLORIDE**
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AD-298 164 DIV. 4

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***POTENTIOMETERS**
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AD-298 794 DIV. 8

***POWDER METALS**
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***POWER EQUIPMENT**
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AD-298 759 DIV. 5

***POWER SUPPLIES**
POWER SUPPLIES

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AD-299 266 DIV. 7

***PRESERVATION**
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***PROBABILITY**
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AD-298 991 DIV. 15

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AD-299 002 DIV. 26

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***PROGRAMMING (COMPUTERS)**
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*PROJECTILES
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AD-298 945 DIV. 22

*PROJECTIVE GEOMETRY

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AD-298 272 DIV. 30

*PROPAGATION
ELECTROMAGNETIC WAVES

RELATIVISTIC DISPERSION RELATIONS FOR TRANSVERSE AND LONGITUDINAL LINEAR PLASMA OSCILLATIONS ARE DERIVED.
AD-298 230 DIV. 25

*PROPAGATION
HIGH FREQUENCY

ASPECT-SENSITIVE SPREAD AND MULTIPATH DELAY ON OFF-AZIMUTH HF ARCTIC SIGNALS LARGELY ABOVE THE MUF.
AD-298 629 DIV. 8

*PROPAGATION
VERY LOW FREQUENCY

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AD-298 592 DIV. 8

*PROPELLANTS
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EFFECTS OF SOLVENT CONTAMINATION ON BALLISTIC PERFORMANCE OF MS FLAKE PROPELLANT IN SMALL EJECTION TYPE ITEMS.
AD-298 609 DIV. 10

*PROPRIOCEPTION
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AD-298 658 DIV. 28

*PROTECTIVE COVERINGS
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AD-299 189 DIV. 20

*PROTEINS
RADIATION DAMAGE

FREE RADICAL REACTIONS INITIATED BY UV LIGHT WITH ALKYL HALIDES AND PHENYL SULFIDE: EXISTENCE OF SULFONIUM RADICAL INTERMEDIATE.
AD-299 008 DIV. 16

*PROTON SCATTERING

ELASTIC PION-PROTON SCATTERING FROM 2 TO 5 GEV/C WAS INVESTIGATED IN A SPARK CHAMBER EXPERIMENT.
AD-299 108 DIV. 20

*PSYCHOLOGY
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A BIBLIOGRAPHY ON BEHAVIORAL RESEARCH AND ASSOCIATED STUDIES.
AD-298 747 DIV. 28

*PULSE TRANSMITTERS
HIGH FREQUENCY

A HIGH FREQUENCY PULSE TRANSMITTER FOR USE IN A PROPOSED EXPERIMENT TO EXAMINE THE LUXEMBOURG EFFECT.
AD-299 083 DIV. 2

*PULSE TRANSMITTERS
RADIO TRANSMITTERS

THE BASIC EQUATIONS RELATING THE INPUT AND OUTPUT SIGNALS OF A LINEAR TIME-VARYING NETWORK ARE REVIEWED AND PUT IN A FORM CONVENIENT FOR MULTIPATH IONOSPHERIC RADIO TRANSMISSION.
AD-298 298 DIV. 5

*PUNCHED CARDS
PROGRAMMING (COMPUTERS)

TRANSITION PROGRAM DESIGNED TO ACCEPT RAW TRACKING AND SATELLITE VEHICLE TIME CALIBRATION DATA FROM A MAGNETIC **TRANSFER** TAPE PRODUCED BY SSRDTLK FROM AUGMENTED SOURCE DATA IN THE CDC-160-A **BIRD NUFFER** COMPUTERS AT THE SATELLITE TEST CENTER.
AD-299 357 DIV. 30

*PUNCHED TAPE
PROGRAMMING (COMPUTERS)

TRANSITION PROGRAM DESIGNED TO ACCEPT RAW TRACKING AND SATELLITE VEHICLE TIME CALIBRATION DATA FROM A MAGNETIC **TRANSFER** TAPE PRODUCED BY SSRDTLK FROM AUGMENTED SOURCE DATA IN THE CDC-160-A **BIRD BUFFER** COMPUTERS AT THE SATELLITE TEST CENTER.
AD-299 357 DIV. 30

*PYROLYSIS

ESTABLISHMENT OF AN EMPIRICAL FORMULA FOR TETRODOTOXIN (C11H17O8N3).
AD-299 231 DIV. 4

*PYROLYSIS
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AD-298 657 DIV. 4

*PYROLYSIS
ELASTOMERS

AN INVESTIGATION OF ELASTOMERIC INSULATION MATERIALS FOR HIGH TEMPERATURE OPERATIONS.
AD-299 294 DIV. 4

*QUARTZ
CRYSTAL HOLDERS

FIVE MC, THIRD OVERTONE QUARTZ CRYSTAL UNITS, IN TYPE HC-27/U GLASS HOLDERS WERE DEVELOPED AND TESTED. RESISTANCE AND TEMPERATURE DATA ARE PRESENTED WITH PRELIMINARY AGING DATA.
AD-298 621 DIV. 8

*QUARTZ
CRYSTAL OSCILLATORS

AGING TEST ARRANGEMENT THAT DEMONSTRATES THE CR-(XX-40)/U CRYSTAL UNITS HAVE FREQUENCY AGING RATES OF LESS THAN 5 PARTS IN 10 TO THE 10TH POWER PER DAY.
AD-298 741 DIV. 8

*QUARTZ RESONATORS
FREQUENCY STABILIZERS

FIVE MC, THIRD OVERTONE QUARTZ CRYSTAL UNITS, IN TYPE HC-27/U GLASS HOLDERS WERE DEVELOPED AND TESTED, RESISTANCE AND TEMPERATURE DATA ARE PRESENTED WITH PRELIMINARY AGING DATA.
AD-298 621 DIV. 8

*QUARTZ RESONATORS
PRODUCTION

INDUSTRIAL PREPAREDNESS STUDY QUARTZ CRYSTAL UNIT CR-(XX-37)/U.
AD-298 933 DIV. 8

*QUARTZ RESONATORS
RADIATION DAMAGE

EXPERIMENTS TO STUDY THE PERFORMANCE OF QUARTZ CRYSTAL UNITS IN PULSE NUCLEAR ENVIRONMENTS.
AD-298 552 DIV. 8

*QUEUEING THEORY

NUMERICAL METHODS FOR QUEUES WITH COMPLEX SERVICE RATES.
AD-298 995 DIV. 26

VARIOUS DISCIPLINES ARE STUDIED FROM THE POINT OF VIEW OF THEIR APPLICABILITY TO COMPLEX-SYSTEM ANALYSIS: QUEUEING THEORY: LANCHESTER THEORY OF COMBAT: NUMERICAL METHODS: GAME THEORY: SIMULATION: MARKOV MODELS: LINEAR GRAPHS.
AD-299 009 DIV. 26

*RADAR
LASERS

MEASUREMENT OF THE OPTICAL MEAN HORIZONTAL REFLECTION POWER IN THE NEAR FIELD FROM STANDARD GEOMETRICAL BODIES AND SURFACES WHEN ILLUMINATED WITH INCOHERENT LIGHT.
AD-298 714 DIV. 6

*RADAR
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AD-298 779 DIV. 8

*RADAR ANTENNAS
ELECTRONIC SCANNERS

THE APPROXIMATION OF LINEAR ARRAY FACTORS, THE LEAST-MEAN-SQUARE COMPARISON OF DIRECTIVITY PATTERNS OF LINE SOURCES HAVING DIFFERENT ILLUMINATION DISTRIBUTIONS IS TREATED.
AD-298 296 DIV. 8

*RADAR BEACONS
ULTRAHIGH FREQUENCY

EVALUATION OF GENERAL AVIATION TRANSPONDERS.
AD-298 308 DIV. 19

*RADAR ECHO AREAS
DISPLAY SYSTEMS

A PROGRAM FOR THE ASSEMBLY AND DISPLAY OF RADAR-ECHO DISTRIBUTIONS.
AD-298 710 DIV. 6

*RADAR ECHO AREAS
GUIDED MISSILES

THE COMBINED EFFECT OF REFRACTION: DOPPLER SHIFT: ABERRATION: AND LIGHT DRAG ON SIGNALS REFLECTED FROM MISSILES.
AD-299 081 DIV. 6

*RADAR NAVIGATION
DOPPLER SYSTEMS

INVESTIGATION OF ARCTIC DOPPLER VELOCITY SENSOR.
AD-299 273 DIV. 19

*RADAR RECEIVERS
ANALOG SYSTEMS

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AD-298 294 DIV. 6

*RADAR REFLECTIONS
IONOSPHERE

TRACKING OF MISSILES AND SPACE VEHICLES: REVIEW OF SOVIET LITERATURE.
AD-298 592 DIV. 8

*RADAR SIGNALS

FILTERING COMPLEX FILTERS WITH COMPLEX FILTERS. THE IMPULSE RESPONSE OF THE FILTERS ARE COMPLEX-VALUED FUNCTIONS. THE SIGNAL AND NOISE PROCESSES MUTUALLY INDEPENDENT AND COMPLEX VALUED. THE ANALYSIS APPLIES TO AN EQUIVALENT FILTERING SYSTEM CONSISTING OF REAL SIGNALS AND REAL FILTERS.
AD-298 743 DIV. 8

*RADAR SIGNALS
DATA PROCESSING SYSTEMS

A PROGRAM FOR THE ASSEMBLY AND DISPLAY OF RADAR-ECHO DISTRIBUTIONS.
AD-298 710 DIV. 6

*RADAR SIGNALS
DISTORTION

THE COMBINED EFFECT OF REFRACTION: DOPPLER SHIFT: ABERRATION: AND LIGHT DRAG ON SIGNALS REFLECTED FROM MISSILES.
AD-299 081 DIV. 6

*RADAR STATIONS
ORBITAL TRAJECTORIES

MILESTONE 5: MRAP TRACKING STATION COMPUTER PROGRAM (OPERATIONAL) COMPUTER SUBPROGRAMS.
AD-298 168 DIV. 6

*RADAR TRACKING
PROGRAMMING (COMPUTERS)

MILESTONE 5: MRAP TRACKING STATION COMPUTER PROGRAM (OPERATIONAL) COMPUTER SUBPROGRAMS.
AD-298 168 DIV. 6

*RADAR TRACKING
RADIOSONDES

DETERMINATION OF THE EFFECTIVENESS ON TRACKING ACCURACY OF ADDING POWER MODULATION TO RAWIN SET AN/GMD-2.
AD-298 980 DIV. 8

*RADIATION DAMAGE
PROTEINS

FREE RADICAL REACTIONS INITIATED BY UV LIGHT WITH ALKYL HALIDES AND PHENYL SULFIDE: EXISTENCE OF SULFONIUM RADICAL INTERMEDIATE.
AD-299 008 DIV. 16

*RADIATION HAZARDS
BUILDINGS

EFFECTS OF LIMITED STRIPS OF CONTAMINATION ON THE DOSE RATE IN A MULTISTORY WINDOWLESS BUILDING.
AD-298 719 DIV. 13

*RADIATION MEASUREMENT SYSTEMS

A PROPORTIONAL-COUNTER SPECTROMETER FOR SOLAR X RAYS BETWEEN 1 AND 10 ANGSTROMS.
AD-298 952 DIV. 20

*RADIATION MEASUREMENT SYSTEMS
AIRCRAFT AMMUNITION

A PORTABLE RADIATION MEASURING INSTRUMENT INTENDED FOR USE BY LOCAL CIVIL DEFENSE UNITS

USING AIRCRAFT OF THE CIVIL AIR PATROL. IT CONSISTS OF THREE UNITS: THE DETECTION UNIT, USING GEIGER-MULLER TUBES; THE METER AND SIGNAL UNIT; AND A SIMULATOR UNIT FOR TRAINING PURPOSES.
AD-298 153 DIV. 20

*RADIO ASTRONOMY
SOLAR RADIATION

TRACKING OF MISSILES AND SPACE VEHICLES; REVIEW OF SOVIET LITERATURE.
AD-298 592 DIV. 8

*RADIO COMMUNICATION SYSTEMS
RADIO INTERFERENCE

INTERFERENCE INDUCED ERROR RATE IN A LONG RANGE BINARY DIGITAL SATELLITE COMMUNICATIONS SYSTEM.
AD-298 167 DIV. 5

*RADIO FIELDS
TREES

EQUATIONS FOR OBTAINING THE APPROXIMATE FIELD STRENGTH IN THE VICINITY OF A GROVE OF TREES FROM A DISTANT TRANSMITTER; THE GROVE OF TREES AND UNDERBRUSH ARE APPROXIMATED BY AN IMPERFECT DIELECTRIC SLAB; EQUATIONS ARE WRITTEN FOR ALL PRINCIPAL PATHS.
AD-299 269 DIV. 8

*RADIO INTERFERENCE
GLOBAL COMMUNICATION SYSTEMS

SELECTED TOPICS PERTAINING TO THE INTERFERENCE VULNERABILITY OF SATELLITE COMMUNICATION SYSTEMS.
AD-298 625 DIV. 5

*RADIO INTERFERENCE
RADIO RECEIVERS

INTERFERENCE INDUCED ERROR RATE IN A LONG RANGE BINARY DIGITAL SATELLITE COMMUNICATIONS SYSTEM.
AD-298 167 DIV. 5

*RADIO INTERFERENCE
REDUCTION

SUPERDIRECTIVE ANTENNA STUDY TASK CONTROL TECHNIQUES FOR RECEIVERS IN HIGH RF FIELDS.
AD-298 920 DIV. 8

*RADIO RECEIVERS
RADIO INTERFERENCE

SUPERDIRECTIVE ANTENNA STUDY TASK CONTROL TECHNIQUES FOR RECEIVERS IN HIGH RF FIELDS.
AD-298 920 DIV. 8

*RADIO RECEPTION
SIGNAL-TO-NOISE RATIO

TECHNIQUES FOR DETECTING AND DECODING EXTREMELY WEAK COMMUNICATION SIGNALS; SYSTEMS STUDIED INCLUDE FSK, PHASE-LOCKED LOOP AND FM-FEEDBACK, AND ERROR DETECTION AND CORRECTION CODING.
AD-299 219 DIV. 5

*RADIO RECEPTION
TREES

EQUATIONS FOR OBTAINING THE APPROXIMATE FIELD STRENGTH IN THE VICINITY OF A GROVE OF TREES FROM A DISTANT TRANSMITTER; THE GROVE OF TREES AND UNDERBRUSH ARE APPROXIMATED BY AN IMPERFECT DIELECTRIC SLAB; EQUATIONS ARE WRITTEN FOR ALL PRINCIPAL PATHS.
AD-299 269 DIV. 8

*RADIO SIGNALS

FILTERING COMPLEX FILTERS WITH COMPLEX FILTERS THE IMPULSE RESPONSE OF THE FILTERS ARE COMPLEX-VALUED FUNCTIONS. THE SIGNAL AND NOISE PROCESSES MUTUALLY INDEPENDENT AND COMPLEX VALUED. THE ANALYSIS APPLIES TO AN EQUIVALENT FILTERING SYSTEM CONSISTING OF REAL SIGNALS AND REAL FILTERS.
AD-298 743 DIV. 8

*RADIO SIGNALS
IONOSPHERIC PROPAGATION

THE BASIC EQUATIONS RELATING THE INPUT AND OUTPUT SIGNALS OF A LINEAR TIME-VARYING NETWORK ARE REVIEWED AND PUT IN A FORM CONVENIENT FOR MULTIPATH IONOSPHERIC RADIO TRANSMISSION.
AD-298 298 DIV. 5

*RADIO SIGNALS
REFRACTION

PARAMETERS OF A LONG-RANGE TROPOSPHERIC FORWARD SCATTER LINK ARE STUDIED.
AD-298 939 DIV. 5

*RADIO SIGNALS
SIGNAL-TO-NOISE RATIO

TECHNIQUES FOR DETECTING AND DECODING EXTREMELY WEAK COMMUNICATION SIGNALS; SYSTEMS STUDIED INCLUDE FSK, PHASE-LOCKED LOOP AND FM-FEEDBACK, AND ERROR DETECTION AND CORRECTION CODING.
AD-299 219 DIV. 5

*RADIO STATIONS
COMMUNICATION EQUIPMENT

COMMUNICATIONS PLAN OF INTERSTATION AND INTRASTATION TERMINATIONS AND FACILITIES TO SUPPORT THE INDIAN OCEAN RADIO STATION.
AD-298 970 DIV. 8

*RADIO TRANSMISSION

AURORAL-ZONE SCINTILLATION OF 20 AND 54 MC RADIO WAVES FROM SATELLITES PRODUCED BY SPORADIC E.
AD-298 594 DIV. 8

*RADIO TRANSMISSION
POLAR REGIONS

ASPECT-SENSITIVE SPREAD AND MULTIPATH DELAY ON OFF-AZIMUTH HF ARCTIC SIGNALS LARGELY ABOVE THE MUF.
AD-298 628 DIV. 8

*RADIO TRANSMISSION
TREES

EQUATIONS FOR OBTAINING THE APPROXIMATE FIELD STRENGTH IN THE VICINITY OF A GROVE OF TREES FROM A DISTANT TRANSMITTER; THE GROVE OF TREES AND UNDERBRUSH ARE APPROXIMATED BY AN IMPERFECT DIELECTRIC SLAB; EQUATIONS ARE WRITTEN FOR ALL PRINCIPAL PATHS.
AD-299 269 DIV. 8

*RADIO TRANSMITTERS
PHYSIOLOGY

ENDORADIOSONDES, OR RADIO PILLS, WHICH CAN BE SWALLOWED OR IMPLANTED TO TRANSMIT PHYSIOLOGICAL DATA.
AD-298 936 DIV. 16

*RADIO TRANSMITTERS
PULSE MODULATION

THE BASIC EQUATIONS RELATING THE INPUT AND OUTPUT SIGNALS OF A LINEAR TIME-VARYING NETWORK ARE REVIEWED AND PUT IN A FORM CONVENIENT FOR MULTIPATH IONOSPHERIC RADIO TRANSMISSION.
AD-298 298 DIV. 5

*RADIO WAVES
ATTENUATION

AURORAL-ZONE SCINTILLATION OF 20 AND 54 MC RADIO WAVES FROM SATELLITES PRODUCED BY SPORADIC E.
AD-298 594 DIV. 8

*RADIO WAVES
MODULATION

A HIGH FREQUENCY PULSE TRANSMITTER FOR USE IN A PROPOSED EXPERIMENT TO EXAMINE THE LUXEMBOURG EFFECT.
AD-299 085 DIV. 2

*RADIO WAVES
MULTIPATH TRANSMISSION

THE BASIC EQUATIONS RELATING THE INPUT AND OUTPUT SIGNALS OF A LINEAR TIME-VARYING NETWORK ARE REVIEWED AND PUT IN A FORM CONVENIENT FOR MULTIPATH IONOSPHERIC RADIO TRANSMISSION.
AD-298 298 DIV. 5

*RADIOACTIVE FALLOUT
SHELTERS

EFFECTS OF LIMITED STRIPS OF CONTAMINATION ON THE DOSE RATE IN A MULTISTORY WINDOWLESS BUILDING.
AD-298 719 DIV. 13

*RADIOBIOLOGY
BIBLIOGRAPHIES

RADIOBIOLOGY BIBLIOGRAPHY. A VOCABULARY IS INCLUDED FOR STORAGE AND RETRIEVAL OF INFORMATION ON RADIOBIOLOGY. CURRENT PROJECTS OF RADIOBIOLOGY ARE LISTED.
AD-298 530 DIV. 16

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CONTROL DATA REQUIREMENTS INVESTIGATION FOR OPTIMIZATION OF FUEL ON SUPERSONIC TRANSPORT VEHICLES.
AD-298 639 DIV. 1

***TRANSPORT PLANES**
SUPERSONIC PLANES

CONTROL DATA REQUIREMENTS INVESTIGATION FOR OPTIMIZATION OF FUEL ON SUPERSONIC TRANSPORT VEHICLES.
AD-298 639 DIV. 1

***TRAVELING WAVE TUBES**
MICROWAVE EQUIPMENT

DIGITAL COMPUTER PROGRAM FOR A TWO-DIMENSIONAL NONLINEAR ANALYSIS OF LARGE SIGNAL TRAVELING WAVE DEVICES. EXPERIMENTAL DATA ON A VARIABLE-PITCH TRAVELING-WAVE AMPLIFIER. NOISE REDUCTIONS IN A BEATING WAVE AMPLIFIER. TECHNIQUES FOR A DEPRESSED POTENTIAL COLLECTOR.
AD-299 019 DIV. 8

***TRITIUM**

TRITIUM DETERMINATION IN ATMOSPHERIC HYDROGEN, ATMOSPHERIC METHANE, AND METEORITES.
AD-298 976 DIV. 2

***TROPOSPHERE**
SCATTERING

PARAMETERS OF A LONG-RANGE TROPOSPHERIC FORWARD SCATTER LINK ARE STUDIED.
AD-298 939 DIV. 5

***TURBOJET ENGINES**
SIMULATION

UNIVERSITY OF SOUTHAMPTON RANDOM SIREN FACILITY DESCRIPTION AND PERFORMANCE.
AD-299 079 DIV. 30

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AD-299 113 DIV. 25

***TURBULENCE**
FLUID DYNAMIC PROPERTIES

HEAT TRANSFER IN A TURBULENT FLUID FLOW AT LARGE PRANDTL NUMBERS AND VARIABLE VISCOSITY. SOVIET SOURCE.
AD-298 652 DIV. 25

***TURBULENT BOUNDARY LAYER**

SOME SIMILARITY SOLUTIONS OF THE BOUNDARY LAYER EQUATIONS FOR LAMINAR, INCOMPRESSIBLE, UNSTEADY FLOWS IN TWO DIMENSIONS AND FOR STEADY FLOWS IN THREE DIMENSIONS WERE OBTAINED, USING AN EXTENSION OF ONE-PARAMETER GROUP METHOD.
AD-299 221 DIV. 9

***TURBULENT BOUNDARY LAYER**
MAGNETOHYDRODYNAMICS

EXPRESSIONS FOR BOUNDARY-LAYER THICKNESS, LONGITUDINAL VELOCITY GRADIENTS FOR APPLICATION TO MAGNETOHYDRODYNAMIC ACCELERATION CHANNELS.
AD-298 200 DIV. 9

***ULTRASONIC RADIATION**
NON-DESTRUCTIVE TESTING

STUDY OF ULTRASONIC METHODS FOR NONDESTRUCTIVE MEASUREMENTS OF RESIDUAL STRESS.
AD-299 017 DIV. 25

***ULTRASONIC RADIATION**
TEST METHODS

FREQUENCY BANDWIDTH CONSIDERATIONS IN ULTRASONIC TESTING OF FLOW GEOMETRY AND FLOW ORIENTATION.
AD-298 842 DIV. 30

***ULTRASONIC RADIATION**
WELDING

AN INVESTIGATION OF ULTRASONIC WELDING OF REFRACTORY METALS AND ALLOYS.
AD-299 397 DIV. 17

***ULTRAVIOLET FILTERS**
ATTENUATION

A PHOTOTROPIC SYSTEM TO PROVIDE PROTECTION AGAINST FLASH BLINDNESS AND RETINAL BURNS RESULTING FROM A NUCLEAR FLASH.
AD-298 225 DIV. 25

***ULTRAVIOLET RADIATION**
PHOTONS

EFFECTS OF ELECTRON COLLISIONS IN ATMOSPHERIC GASES ARE STUDIED.
AD-298 703 DIV. 2

***UNDERGROUND EXPLOSIONS**

THEORETICAL CALCULATIONS OF WALL PRESSURES AN ELASTIC WAVE RADIATIONS FROM HIGH-EXPLOSIVE DETONATIONS IN SPHERICAL CAVITIES IN SALT COMPARED WITH CLOSE-IN EXPERIMENTAL RESULTS FROM THE COWBOY PROGRAM.
AD-298 967 DIV. 22

TABULAR AND GRAPHIC DATA ON THE TRAVEL TIMES AND AMPLITUDES OF THE PRINCIPAL PHASES GENERATED BY THE STILLWATER EVENT.
AD-299 109 DIV. 2

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SHOCK WAVES

GUIDE FOR THE DESIGN OF SHOCK ISOLATION SYSTEMS FOR UNDERGROUND PROTECTIVE STRUCTURES.
AD-298 579 DIV. 13

***UNDERWATER SOUND SIGNALS**
ECHO RANGING

THE RESULTS OF MEASUREMENTS OF REFLECTION COEFFICIENTS OF UNDERWATER BOTTOMS CARRIED OUT BY A CORRELATION TECHNIQUE OVER THE FREQUENCY RANGE FROM 800 CPS TO 3200 CPS ARE PRESENTED.
AD-299 319 DIV. 2

***UNITED STATES GOVERNMENT**
MANAGEMENT ENGINEERING

BUSINESS MANAGEMENT COMPARED WITH GOVERNMENT MANAGEMENT TO DETERMINE IF THERE ARE ANY AVAILABLE BENEFITS FROM BUSINESS WHICH COULD BE APPLIED TO GOVERNMENT.
AD-298 274 DIV. 26

***UPPER ATMOSPHERE**
DYNAMICS

COMPUTER SOLUTION OF SIMULTANEOUS DIFFUSION ANALOG COMPUTER PROGRAM FOR THE SOLUTION OF CHEMICAL KINETICS EQUATIONS RELATING TO UPPER ATMOSPHERE RELEASES.
AD-298 730 DIV. 25

***URBAN AREAS**
DATA PROCESSING SYSTEMS

ELECTRONIC DATA PROCESSING FOR CITIES.
AD-298 966 DIV. 30

***URINE**
BODY TEMPERATURE

DEHYDRATION RESULTING FROM PROLONGED WATER IMMERSION.
AD-298 186 DIV. 16

***URINE**
RIBONUCLEIC ACIDS

STUDIES OF THE CATABOLISM OF THYMINE BY CORYNEBACTERIUM HAVE REVEALED THAT THYMINE IS FIRST OXIDIZED TO 5-METHYLBARBITURIC ACID. EXPERIMENTS CONCERNED WITH NUCLEIC ACID BIOSYNTHESIS FROM C14-LABELED PYRIMIDINES INDICATE THAT 5-METHYLBARBITURIC ACID IS AN INDIRECT NUCLEIC ACID PYRIMIDINE PRECURSOR, AND THAT IN TEST WITH RATS 5-METHYLBARBITURIC ACID IS NONTOXIC AND NOT METABOLIZED BY THIS ANIMAL, BUT EXCRETED WITH THE URINE.
AD-299 258 DIV. 16

***VACUUM APPARATUS**
MEASURING DEVICES (ELECTRICAL & ELECTRONIC)

MEASUREMENT OF PRESSURE IN AN ULTRA-HIGH VACUUM ENVIRONMENT, INCLUDING THE EFFECT OF ADSORPTION, MULTI-GAUGE OPERATION, AND STREAMING WAS STUDIED.
AD-298 982 DIV. 30

***VANADIUM ALLOYS**
DISPERSION HARDENING

DISPERSION-STRENGTHENED VANADIUM ALLOYS.
AD-298 937 DIV. 17

***VARIABLE-INCIDENCE WINGS**
MODEL TESTS

WIND TUNNEL CORRELATION STUDY OF NORTH AMERICAN TILT-WING MODEL TESTED IN THE NACAL 14 X 16 FT. TUNNEL AND THE AIRSHIP MODEL TEST FACILITY.
AD-298 289 DIV. 30

***VECTOR ANALYSIS**

THE THEOREM OF F. AND M. RIESZ ON ANALYTIC MEASURES IS GENERALIZED TO VECTOR VALUED MEASURES. THIS RESULT IS USED TO PROVE A THEOREM ABOUT THE BOUNDARY VALUES OF ANALYTIC VECTOR VALUED FUNCTIONS.
AD-299 228 DIV. 15

***VELOCITY**

INVESTIGATION OF ARCTIC DOPPLER VELOCITY SENSOR.
AD-299 273 DIV. 19

***VERTICAL TAKE-OFF PLANES**
WIND TUNNEL MODELS

WIND TUNNEL CORRELATION STUDY OF NORTH AMERICAN TILT-WING MODEL TESTED IN THE NACAL 14 X 16 FT. TUNNEL AND THE AIRSHIP MODEL TEST FACILITY.
AD-298 289 DIV. 30

***VERY HIGH FREQUENCY**

EQUATIONS FOR OBTAINING THE APPROXIMATE FIELD STRENGTH IN THE VICINITY OF A GROVE OF TREES FROM A DISTANT TRANSMITTER; THE GROVE OF TREES AND UNDERBRUSH ARE APPROXIMATED BY AN IMPERFECT DIELECTRIC SLAB; EQUATIONS ARE WRITTEN FOR ALL PRINCIPAL PATHS.
AD-299 265 DIV. 8

***VIBRATION**

DESIGN EVALUATION TEST PROGRAM FOR SAFETY AND ARMING MECHANISM FOR THE SKYBOLT.
AD-299 365 DIV. 12

***VIDEO AMPLIFIERS**
ELECTRON TUBES

IMPROVED CHARACTER SELECTION AND BEAM COMPENSATION AMPLIFIER FOR THE PLAN POSITION DATA DISPLAY.
AD-298 932 DIV. 8

***VISCOSITY**

HEAT TRANSFER IN A TURBULENT FLUID FLOW AT LARGE PRANDTL NUMBERS AND VARIABLE VISCOSITY. SOVIET SOURCE.
AD-298 652 DIV. 25

***WAKE**

STAGNATION AND WAKE FLOWS NORMAL TO A FLAT SURFACE ARE STUDIED.
AD-299 356 DIV. 9

***WAR POTENTIAL**

NATIONAL SECURITY EXPENDITURES. ECONOMICS OF US - USSR.
AD-298 630 DIV. 32

***WARFARE**
CASUALTIES

COMBAT EFFECTIVENESS OF ALLIED AND GERMAN TROOPS IN THE WORLD WAR II INVASION OF CRETE.
AD-298 786 DIV. 18

***WATER**
VIBRATION

THE STRENGTH OF THE VIBRATION OF WATER.
AD-298 648 DIV. 25

WATER VAPOR
MOLECULAR SPECTROSCOPY

PURE ROTATIONAL SPECTRUM OF WATER VAPOR: TABLE OF LINE PARAMETERS.
AD-298 151 DIV. 25

WAVE TRANSMISSION
DIFFRACTION

DIFFRACTION OF PULSES BY A HALF-PLANE.
AD-298 801 DIV. 15

DIFFRACTION OF PLANE ELASTIC WAVES BY A CRACK WITH APPLICATION TO A PROBLEM OF BRITTLE FRACTURE.
AD-298 802 DIV. 25

WAVE TRANSMISSION
THEORY

DISCUSSES THE THEORY OF WAVE AND SCATTERING OPERATORS AND THE RELATED THEORY OF UNITARY EQUIVALENCE OF SELFADJOINT OPERATORS.
AD-298 599 DIV. 9

WAVEGUIDE WINDOWS
FAILURE (MECHANICS)

MICROWAVE WAVEGUIDE WINDOW FAILURE MECHANISMS. MULTIPACTOR HEATING AND WINDOW SEAL ARCING AS FACTORS IN WINDOW FAILURE. SINTERED ALUMINUM AND SYNTHETIC SAPPHIRE AS DIELECTRIC MATERIALS TO REDUCE MULTIPACTOR.
AD-298 901 DIV. 8

WAVEGUIDES
FERRITES

PROPAGATION CHARACTERISTICS OF AN OPEN FERRITE-LOADED WAVEGUIDE AT X- AND S-BAND.
AD-298 841 DIV. 8

WIND

AN ADVECTION TECHNIQUE, USING UPPER-LEVEL FLOW AND A MODIFIED LINEAR-LAG CORRELATION-EXTRAPOLATION TECHNIQUE, FOR PREDICTION OF CLOUD MOVEMENT.
AD-298 934 DIV. 2

WIND DIRECTION INDICATORS

TESTS TO DETERMINE OPERATION AND ACCURACY OF THE INDIVIDUAL COMPONENTS OF THE WIND MEASURING SET AN/GMQ-20(V) WHEN INTERCONNECTED AND OPERATED AS A SYSTEM UNDER SIMULATED FIELD CONDITIONS.
AD-298 731 DIV. 30

WIND TUNNELS
INSTRUMENTATION

WIND TUNNEL CORRELATION STUDY OF NORTH AMERICAN TILT-WING MODEL TESTED IN THE NACAL 14 X 16 FT. TUNNEL AND THE AIRSHIP MODEL TEST FACILITY.
AD-298 289 DIV. 30

WING-BODY CONFIGURATIONS

SUPERSONIC FLUTTER OF AIRFRAMES WITH FLEXIBLE BODIES.
AD-299 283 DIV. 9

WING-BODY CONFIGURATIONS
INTERFERENCE

INVESTIGATION OF WING-BODY INTERFERENCE AS A MEANS OF REDUCING CONFIGURATION WAVE DRAG.
AD-298 902 DIV. 9

WOUNDS & INJURIES
THORAX

RESPIRATORY FUNCTION FOLLOWING THORACIC AND THORACO-ABDOMINAL INJURIES: PULMONARY COMPLIANCE, ALVEOLAR VENTILATION, INSPIRED GAS DISTRIBUTION, VENTILATION AND GAS EXCHANGE, VENTILATION-PERFUSION IMBALANCE.
AD-299 364 DIV. 16

TECHNICAL ABSTRACT BULLETIN

1. AIRCRAFT AND FLIGHT EQUIPMENT

AD-298 259 Div. 1, 7
(TISTA/FRL) OTS price $5.60

Microwave Research Inst., Polytechnic Inst. of Brooklyn, N. Y.
SENSITIVITY OF SOME LOW ORDER BANG-BANG CONTROL SYSTEMS,
by Prem Shivdasani. 4 Feb 63, 49p. (Research rept. no. PIBMRI-1081-62)
(Grant AFOSR 62-295) Unclassified report

DESCRIPTORS: *Adaptive control systems, Errors, Analysis, Integral transforms, Time, Phase studies, Functions, Trajectories, Nonlinear differential equations, Servomechanisms.

AD-298 331 Div. 1
(TISTA/GEC) OTS price $5.60

Air Crew Equipment Lab., Naval Air Material Center, Philadelphia, Pa.
AIRCRAFT DETECTABILITY AND VISIBILITY: VI. A QUALITATIVE REVIEW AND ANALYSIS OF THE UTILITY OF FLUORESCENT PAINT FOR INCREASING AIRCRAFT DETECTABILITY AND CONSPICUITY,
by A. I. Siegel and R. Lanterman. 4 Mar 63, 54p. incl. illus. tables, 21 refs. (Rept. no. NAEC-ACEL-492)
Unclassified report

DESCRIPTORS: *Aircraft finishes, *Aircraft, Paints, Pilots, Aviation personnel, Naval aircraft, Fluorescence, Detection, Visibility.

Both pilot opinion and recent basic and applied studies of fluorescent paint are considered. The pilot opinion sampled supported the use of fluorescent paint for increasing aircraft conspicuity and detectability. Although not all the basic and applied studies of fluorescent paint reviewed indicated self-consistent findings, the use of fluorescent paint for increasing aircraft conspicuity and detectability also seemed indicated by these studies. A series of recommendations on fluorescent paint application is presented. (Author)

AD-298 639 Div. 1
(TISTA/LSK) OTS price $1.10

Hughes Aircraft Co., Culver City, Calif.
CONTROL DATA REQUIREMENTS INVESTIGATION FOR OPTIMIZATION OF FUEL ON SUPERSONIC TRANSPORT VEHICLES.
Monthly progress rept. no. 6, 28 Jan-24 Feb 63, by D. W. Richardson and J. Popkin. 25 Feb 63, 6p. (Rept. no. 63H-1346/9299)
(Contract AF 33(657)8822, Proj. 9056)
Unclassified report

DESCRIPTORS: *Transport planes, *Fuel consumption, Flight paths, Effectiveness, Supersonic planes, Jet planes, Simulation.

AD-299 027 Div. 1
(TISTA/LSK) OTS price $3.00

Battelle Memorial Inst., Columbus, Ohio.
DESIGN CRITERIA FOR HIGH-SPEED POWER-TRANSMISSION SHAFTS. PART 1. ANALYSIS OF CRITICAL SPEED EFFECTS AND DAMPER SUPPORT LOCATION.
Final technical rept., May 61-July 62 on Phase I, by R. G. Dubensky, C. C. Mellor, Jr., and J. E. Voorhees. Jan 63, 161p.
(Contract AF 33(616)8290, Proj. 8128)
(ASD TDR 62-728, pt. 1) Unclassified report

DESCRIPTORS: *Shafts, Damping, Vibration, Torque, Power, Dynamics, Equations, Mathematical analysis, Helicopter rotors, Transmissions, Helicopters, Short take-off planes, Vertical take-off planes.

AD-299 123 Div. 1
(TISTA/GEC) OTS price $8.60

Cornell Aeronautical Lab., Inc., Buffalo, N. Y.
AUTOMATIC CONTROL OF STATIC ELECTRICITY FOR ARMY HELICOPTERS,
by C. J. Tona. Oct 62, 86p.
(Contract DA 44-177-tc-652)
(TCREC TR 62-22) Unclassified report

DESCRIPTORS: *Helicopters, *Control systems, *Static dischargers, Army aircraft, Electrostatic fields, Flight testing, Static electricity, Automatic.

AD-299 124 Div. 1
(TISTA/GEC) OTS price $17.50

Hayes Corp., Birmingham, Ala.
FEASIBILITY OF REINFORCED PLASTICS FOR PRIMARY STRUCTURE OF ARMY AIRCRAFT.
Rept. for July 61-Jan 63.
Mar 63, 262p. (Rept. no. 743)
(Contract DA 44-177-tc-756)
(TRECOM TR 63-15) Unclassified report

DESCRIPTORS: *Army aircraft, *Laminated plastics, *Composite materials, Feasibility studies, Fuselages, Wings, Landing gear, Transmissions, Shafts, Fuel tanks, Glass textiles, Rotary blades (Rotary wings), Aircraft, Structures, Airframes.

AD-299 279 Div. 1
(TISTB/AW) OTS price $13.00

Airborne Instruments Lab., Inc., Deer Park, N. Y.
AIRPORT TERMINAL PLAN STUDY,
by P. H. Stafford, C. A. Denzler and others.
Feb 62, 1v. (Rept. no. 7601-5)
(Contract FAA/RDS-136)
Unclassified report

DESCRIPTORS: *Airports, Civil aviation, Operations research, Operation, Design.

AD-299 315 Div. 1
(TISTA/LSK) OTS price $3.60

Air Force Proving Ground Command, Eglin Air Force Base, Fla.
COMPATIBILITY TEST OF THE A/A37U-15 TOW SUBSYSTEM WITH THE F-105D AIRCRAFT.

Final rept.,
by Wayne M. Kaser. Mar 63, 33p. (Rept. no. APGC-TDR-63-17)
(APGC Proj. 6830W2)
Unclassified report

DESCRIPTORS: *Towing cables, Towing planes, Compatibility, Flight testing, Jet fighters.

2. ASTRONOMY, GEOPHYSICS AND GEOGRAPHY

AD-298 207 Div. 2, 8
(TISTP/FR) OTS price $9.10

Foreign Technology Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
TRANSACTIONS OF THE ACADEMY OF SCIENCES OF THE USSR, INSTITUTE OF EARTH'S MAGNETISM, THE IONOSPHERE, AND RADIO WAVE PROPAGATION (SELECTED ARTICLES).
14 Feb 63, 107p. (Trans. no. FTD-TT-62-1330 from Akademiya Nauk SSSR, Trudy Instituta Zemnogo Magnetizma, Ionosfery, i Rasprostraneniya Radiovoln 17:27, pp. 216-239 and 240-280, Moskva, 1960)
Unclassified report

DESCRIPTORS: *Ionosphere, *Ionospheric propagation, *Ionospheric disturbances, Atmospheric sounding, Frequency, Periodic variations, Statistical analysis, Ionization.

AD-298 255 Div. 2, 25
(TISTP/MB) OTS price $4.60

Liege U. (Belgium).
MIE SCATTERING FUNCTIONS FOR SPHERICAL PARTICLES OF REFRACTIVE INDEX m = 1.25.
by L. Remy-Battiau. 30 Nov 62, 46p. (Technical note no. 1)
(Contract AF 61(052)587)
(AFCRL 63-233) Unclassified report

DESCRIPTORS: *Light, Tables, Astrophysics, Astronomical data, Comets, Polarization, Dielectrics, Spheres, Refraction, Particles, Mathematical analysis, Intensity, Scattering.

AD-298 260 Div. 2
(TISTB/AW) OTS price $8.60

Meteorology Research, Inc., Pasadena, Calif.
VERTICAL DIFFUSION FROM A LOW ALTITUDE LINE SOURCE. DALLAR TOWER STUDIES. VOLUME 1.
Final rept.,
by P. B. MacCready, Jr., T. B. Smith, and M. A. Wolf. Dec 61, 65p. (Rept. no. MR161-FR-33)
(Contract DA 42-007-eml-504)
Unclassified report

DESCRIPTORS: *Scattering, Diffusion, Distribution, Turbulence, Convection, Wind, Meteorological parameters, Collecting methods, Fluorescence, Particles.

AD-298 261 Div. 2
(TISTB/AW) OTS price $10.50

Meteorology Research, Inc., Pasadena, Calif.
VERTICAL DIFFUSION FROM A LOW ALTITUDE LINE SOURCE. DALLAS TOWER STUDIES. VOLUME 2.
Data summary, Final rept. for Apr-Aug 61,
by P. B. MacCready, Jr., T. B. Smith, and M. A. Wolf. Dec 61, 1v. (Rept. no. MR161-FR-33)
(Contract DA 42-007-eml-504)
Unclassified report

DESCRIPTORS: *Scattering, Diffusion, Distribution, Turbulence, Convection, Wind, Meteorological parameters, Collecting methods, Fluorescence, Particles.

AD-298 556 Div. 2
(TISTP/JW) OTS price $3.60

Allied Research Associates, Inc., Concord, Mass.
OPERATIONAL ASPECTS OF DRY ICE PELLET DISPENSING MACHINE IN CLOUD SEEDING EXPERIMENTS.
Final rept.,
by Anthony F. Souza. 30 June 62, 27p.
(Contract AF 19(604)8802, Proj. 6697)
(AFCRL 62-1129) Unclassified report

DESCRIPTORS: *Artificial precipitation, Ice, Measurement, Reliability Automation.

AD-298 584 Div. 2
(TISTP/JW) OTS price $1.60

Midwest Research Inst., Kansas City, Mo.
RESEARCH STUDIES RELATED TO MAPPING, GEODESY AND POSITION DETERMINATION.
Interim technical rept. no. 15, 19 June-18 Sep 62,
by R. S. Brown. 16 Oct 62, 9p.
(Contract DA 44-009-eng-3769, Proj. 8T35-12-001-01)
Unclassified report

DESCRIPTORS: *Mapping, Wave analyzers, Measurement, Refractive index, Geodesics.

AD-298 588 Div. 2
(TISTA/LSK) OTS price $1.60

Aerospace Information Div., Washington, D. C.
PHENOMENA IN THE UPPER ATMOSPHERE. REVIEW OF SOVIET LITERATURE.
26 Feb 63, 15p. (AID rept. no. P-63-28; Series rept. no. 32)
Unclassified report

DESCRIPTORS: *Astrophysics, *Geophysics, Solar radiation, Van Allen radiation belt, Radio waves, Atmospheric electricity, Meteorological satellites, Meteorology, Upper atmosphere, Scientific research.

AD-298 590 Div. 2, 25
(TISTP/JW) OTS price $1.10

Aerospace Information Div., Washington, D. C.
ON PHOTOELECTRIC MEASUREMENTS OF THE NIGHTGLOW OF THE SKY,
by A. D. Bolyunova and V. M. Morozov. 21 Feb 63, 9p. (AID rept. no. T-63-25; Trans. from O fotoelektricheskikh izmereniyakh nochnogo neba. IN: Akademiya nauk SSSR. Izvestiya. Seriya geofizicheskaya, no. 2, pp. 321-325, 1959)
Unclassified report

DESCRIPTORS: *Night sky, *Photoelectric effect, Band-pass filters, Instrumentation, Atmosphere, Measurement.

AD-298 616 Div. 2, 6
(TISTW/RD) OTS price $8.60

Washington U., Seattle.
APPLICATION OF RADAR DATA TO PROBLEMS IN SYNOPTIC METEOROLOGY.

Final rept.,
by Richard J. Reed and Carl W. Kreitzberg.
Dec 62, 82p.
(Contract AF 19(604)5192, Proj. 8641)
(AFCRL 63-22) Unclassified report

DESCRIPTORS: *Meteorological radar, *Storms, *Cyclones, Meteorology, Radar, Atmospheric precipitation, Meteorological charts, Cloud height indicators, Analysis, Radar echo areas, Radar reflections.

AD-298 627 Div. 2, 4, 25, 15
(TISTW/PCR) OTS price $2.60

Queen's U., Belfast (Gt. Brit.).
THE HYDROXYL BANDS IN THE NIGHTGLOW,
by A. F. Ferguson and D. Parkinson. 1960, 24p. illus.
(Grant AF EOAR 62-118)
(AFCRL-63-239) Unclassified report

DESCRIPTORS: *Night sky, *Hydroxides, Chemical reactions, Mathematical analysis, Equations, Integrals, Glow discharges, Band spectrum.

AD-298 628 Div. 2
(TISTP/FR) OTS price $1.60

Air Force Cambridge Research Labs., Bedford, Mass.
A USAF AIR BASE GRAVITY NETWORK,
by Lloyd G. D. Thompson, Charles S. Hawkins, and Robert M. Perry. Dec 62, 17p. (Rept. no. AFCRL-62-1113)
(Proj. 7600)
Unclassified report

DESCRIPTORS: *Gravity, Standards, Airports, Air Force.

AD-298 646 Div. 2
(TISTP/FR) OTS price $1.60

Air Force Cambridge Research Labs., Bedford, Mass.
SOLAR FLUX MEASUREMENTS, APRIL 1962, AND ANTENNA CONSIDERATIONS,
by John P. Castelli. Dec 62, 15p. (Rept. no. AFCRL-62-1111)
(Proj. 4643)
Unclassified report

DESCRIPTORS: *Extraterrestrial radio waves, *Sun, *Parabolic antennas, Very high frequency, Ultrahigh frequency, Extremely high frequency.

AD-298 650 Div. 2
(TISTP/FR) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
AN INVESTIGATION OF THE FINE STRUCTURE OF THE F LAYER OF THE IONOSPHERE,
by N. T. Tsymbal. 5 Mar 63, 9p. (Trans. no. FTD-TT-62-1388/1+2+4 from Russian Periodical, Akademiya Nauk Ukrainskoyi Rsr. Organizatsionnyy Komitet Po Provedeniyu Mezhdunarodnogo Geofizicheskogo Goda. Mezhdunarodnyy Geofizicheskiy God Informatsionnyy Byulleten, no. 3, pp. 19-23, 1961)
Unclassified report

DESCRIPTORS: *Ionosphere, Radio waves, Reflection, Scattering, Periodic variations, Statistical analysis.

AD-298 703 Div. 2, 20
(TISTP/TL) OTS price $4.60

University Coll., London (Gt. Brit.).
RESEARCH ON EFFECTS OF ELECTRON COLLISIONS IN ATMOSPHERIC GASES.
Technical rept.,
by R. W. Lunt. 14 Feb 62, 50p.
(Contract AF 61(052)110)
(AFCRL-62-1077) Unclassified report

DESCRIPTORS: *Atmosphere, *Nitrogen, *Oxygen, *Ultraviolet radiation, Pressure, Gases, Photons.

AD-298 737 Div. 2
(TISTP/FR) OTS price $2.60

Army Engineer Geodesy, Intelligence and Mapping Research and Development Agency, Fort Belvoir, Va.
SOME RELATIONS BETWEEN THE GEOMETRICAL QUALITY OF TOPOGRAPHIC MAPPING AND AERIAL PHOTOGRAMMETRY,
by K. Bertil P. Hallert. 17 Aug 62, 22p. (Research note no. 7)
Unclassified report

DESCRIPTORS: *Mapping, *Photogrammetry, Terrain, Geometry.

AD-298 778 Div. 2, 25
(TISTW/JEA) OTS price $17.50

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
THERE ARE SEVEN ELEMENTS IN THE WORLD,
by M. Vasil'yev and K. Stanyukovich. 20 Feb 63, 275p. (Trans. no. FTD-TT-62-960/1+2 from Izdatel'stvo Tsk Vlksm ''Molodaya Gvardiya'', Moskva, pp. 1-255, 1961)
Unclassified report

DESCRIPTORS: *Space probes, *Gases, *Astronautics, *Explosions, Plasma physics, Astronomy, Relativity theory, Energy, Space environmental conditions, Space stations, Shock waves, Velocity, Explosive materials, Mathematics, Theory, Dynamics, Explosion effects.

AD-298 782 Div. 2, 25
(TISTW/PCR) OTS price $1.10

Uppsala U. (Sweden).
ANALYSIS OF THE VARIATIONS OF THE MAGNETIC FIELD OF LIGHTNING DISCHARGES AND VARIATIONS OF THE ELECTROMAGNETIC FIELD AT DISTANCES FROM LIGHTNING DISCHARGES.
Summary rept. no. 2, 1 Apr 61-30 June 62,
by Harald Norinder. 31 July 62, 5p.
(Contract AF 61(052)171)
(AFCRL 62-786) Unclassified report

DESCRIPTORS: *Lightning, Instrumentation, Communication systems, Tests, Test methods, Magnetic fields, Electromagnetic fields.

AD-298 839 Div. 2, 12
(TISTA/FRL) OTS price $3.60

Army Missile Command, Redstone Arsenal, Huntsville, Ala.
ATMOSPHERIC ENVIRONMENT FOR PERSHING MISSILE-351,
by Novella S. Billions. 7 Jan 63, 30p. (Rept. no. RR-TR-63-2)
Unclassified report

DESCRIPTORS: *Guided missiles (Surface-to-surface), *Meteorology, Weather forecasting, Wind, Meteorological charts, Sounding rockets, Temperature, Pressure, Humidity, Thermodynamics, Launching, Atmosphere, Measurement.

Division 2 - ASTRONOMY, GEOPHYSICS AND GEOGRAPHY

AD-298 909 Div. 2
(TISTP/FR) OTS price $1.60

Queen Mary U. of London (Gt. Brit.).
GEOMAGNETIC CONTROL OF DIFFUSION IN THE F2 REGION OF THE IONOSPHERE,
by P. C. Kendall. 25 Oct 62, 5p. illus. refs.
(Technical note no. TN-2)
(Contract AF EOAR 61-41)
(AFCRL 63-229) Unclassified report

DESCRIPTORS: *Ionosphere, Electrons, Diffusion, Terrestrial magnetism.

AD-298 924 Div. 2
(TISTP/FR) OTS price $3.60

Army Map Service, Washington, D. C.
THE PARALLAX OF THE MOON IN TERMS OF A WORLD GEODETIC SYSTEM,
by Irene Fischer. Aug 62, 35p. (Technical rept. no. 34)
Unclassified report

Presented in parts to the 42nd and 43rd Annual Meeting of the American Geophysical Union in Washington, D. C., 1961 and 1962.

DESCRIPTORS: *Moon, *Earth, Astronomical geodesics, Geodesics.

AD-298 951 Div. 2
(TISTP/FR) OTS price $7.60

Imperial Coll. of Science and Tech., London (Gt. Brit.).
CUMULONIMBUS CONVECTION IN SHEAR,
by J. S. A. Green and R. P. Pearce. Nov 62, 55p. illus. (Technical (Scientific) note no. 12)
(Contract AF 61(052)254), Proj. 8620)
(AFCRL-63-257) Unclassified report

DESCRIPTORS: *Cumulonimbus clouds, *Convection, Gas flow, Atmospheric precipitation, Heat transfer, Thunderstorms.

AD-298 954 Div. 2
(TISTP/FR) OTS price $1.00

Travelers Weather Research Center, Hartford, Conn.
CLOUD AND CEILING PREDICTION BY ADVECTION AND BY LINEAR LAG,
by Donald A. Chisholm. Sep 62, 35p. (Technical memo. no. 17; Rept. no. 7044-33)
(Contract FAA/BRD-363)
Unclassified report

DESCRIPTORS: *Clouds, *Ceiling, *Wind, High altitude, Statistical analysis, Weather forecasting.

AD-298 974 Div. 2, 4
(TISTP/FR) OTS price $1.60

Max-Planck-Institut Fuer Chemie, Mainz (Germany).
TRITIUM DETERMINATIONS IN ATMOSPHERIC GASES AND METEORITES.
Summary rept. no. 2, 1 Nov 61-31 Oct 62,
by F. Begemann. 31 Oct 62, 11p.
(Contract AF 61(052)465)
(AFCRL-63-260) Unclassified report

DESCRIPTORS: *Atmosphere, *Meteorites, *Tritium, Hydrogen.

AD-298 981 Div. 2
(TISTP/JW) OTS price $10.10

Hydraulic Engineering Lab., U. of Calif., Berkeley.
TRANSPORTATION OF BED MATERIAL DUE TO WAVE ACTION,
by George Kalkanis. Feb 63, 114p. (Technical rept. no. HEL-2-4)
(Contracts DA 49-055-ENG-17 and DA 49-055-CE-63-4)
Unclassified report

DESCRIPTORS: *Sedimentation, *Hydrodynamics, Measurement, Surface properties, Stability, Linear systems, Ocean bottom, Topography, Fluid mechanics.

AD-299 000 Div. 2
(TISTW/JEA) OTS price $5.60

Travelers Weather Research Center, Hartford, Conn.
OBJECTIVE TECHNIQUES FOR THE ANALYSIS OF CLOUDS AND CEILINGS,
by Earl L. Davis. Nov 62, 51p. (Technical pub. no. 18; Rept. no. 7044-35)
(Contract FAA/BRD-363)
Unclassified report

DESCRIPTORS: *Clouds, *Cloud cover, Numerical methods and procedures, Sequences, Statistical analysis, Atmospheric condensation, Weather forecasting, Meteorological parameters, Cloud height indicators, Analysis, Numerical analysis, Ceiling.

AD-299 011 Div. 2
(TISTM/AM) OTS price $2.60

Northeastern U., Boston, Mass.
EXPERIMENTAL INVESTIGATION FOR THE MEASUREMENT OF PARTICLE DAMAGE TO SURFACES OF SPACE VEHICLES. Final rept.,
by Richard B. Oppenheim and Louis J. Nardone. 31 Dec 62, 26p.
(Contract AF 19(604)7311, Proj. 7667; Continuation of Contract AF 19(604)1749)
(AFCRL 63-206) Unclassified report

DESCRIPTORS: *Films, *Silver, *Particles, *Damage, Spacecraft, Meteorites, Electrical properties, Neutron reactions, Glow discharges, Low-pressure research, Ion bombardment, Surface properties, Theory, Space environmental conditions, Solar radiation, Sounding rockets, Erosion, Vapor plating.

AD-299 066 Div. 2, 6
(TISTW/PCR) OTS price $2.60

Illinois State Water Survey, Urbana.
INVESTIGATION OF THE QUANTITATIVE DETERMINATION OF POINT AND AREAL PRECIPITATION BY RADAR ECHO MEASUREMENTS.
Quarterly technical rept. no. 5, 1 Oct-31 Dec 62,
by E. A. Mueller, G. E. Stout, and William C. Ackermann. 31 Dec 62, 13p. illus.
(Contract DA 36-039-sc-87280)
Unclassified report

DESCRIPTORS: *Meteorological radar, *Raindrops, Rainfall, Atmospheric precipitation, Atmospheric condensation, Condensation, Drops, Cameras, Tables, Meteorological instruments, Radar echo areas, Measurement.

AD-299 083 Div. 2, 8
(TISTP/FR) OTS price $1.10

Cornell Aeronautical Lab., Inc., Buffalo, N. Y.
EXPERIMENT LUXEMBOURG II.
Summary rept.,
by H. A. von Biel. 17 Jan 63, 7p. (Rept. no. VC-1609-P-1)
(Contract AF 19(604)8842, Proj. 8653)
(AFCRL 63-221) Unclassified report

DESCRIPTORS: *Radio waves, *Pulse transmitters, *Ionosphere, Modulation, High frequency.

AD-299 091 Div. 2
(TISTP/FR) OTS price $2.60

Aerospace Information Div., Washington, D. C.
METEORIC MATTER AND SOME GEOPHYSICAL PROBLEMS OF THE HIGH ATMOSPHERIC LAYERS,
by B. A. Mirtov. 25 Feb 63, 20p. (AID rept. no. T-63-29; Trans. from Akademiya nauk SSSR. Iskusstvennyye sputniki zemli, no. 4, pp. 118-134, 1960)
Unclassified report

DESCRIPTORS: *Ionosphere, *Meteors, Light, Scattering, Luminescence, Particles.

AD-299 109 Div. 2
(TISTP/FR) OTS price $6.60

Geotechnical Corp., Garland, Tex.
STILLWATER.
Final rept.,
by Notley G. Maddox. 15 June 62, 1v. (Rept. no. NP-12444)
(Contract AF 33(600)41694)
Unclassified report

DESCRIPTORS: *Seismic waves, *Nuclear explosions, *Underground explosions, Statistical analysis, Data, Seismological stations.

AD-299 134 Div. 2
(TISTP/FR) OTS price $9.60

Cornell Aeronautical Lab., Inc., Buffalo, N. Y.
PROJECT PHOTOREK III. A STUDY OF AERIAL PHOTOGRAPHIC CONTRAST ATTENUATION BY THE ATMOSPHERE.
Interim data reduction and analysis rept.,
by M. J. Mazurowski. 2 Jan 63, 115p. (CAL rept. no. VF-1682-G-2; Technical note no. 2)
(Contract AF 33(657)8993, Proj. 6620)
Unclassified report

DESCRIPTORS: *Aerial photography, *Atmosphere, Meteorological parameters, Measurement.

AD-299 263 Div. 2, 33
(TISTM/ODN) OTS price $2.60

Army Cold Regions Research and Engineering Lab., Wilmette, Ill.
A CORRELATION OF UNCONFINED COMPRESSIVE STRENGTH AND RAM HARDNESS OF PROCESSED SNOW,
by Gunars Abele. Jan 63, 14p. (Technical rept. no. 85)
(DA proj. 8-66-02-400)
Unclassified report

DESCRIPTORS: *Snow, Compressive properties, Hardness, Tests, Tables, Experimental data, Roads, Runways, Mechanical properties.

AD-299 292 Div. 2
(TISTP GRW) OTS price $9.60

New Hampshire U., Durham.
VARIATIONS IN THE COSMIC-RAY NUCLEONIC INTENSITY.
Final rept.,
by J. A. Lockwood. 1 Jan 63, 75p.
(Contract AF 19(604)4552, Proj. 8600)
(AFCRL 63-242) Unclassified report

DESCRIPTORS: *Cosmic rays, *Neutrons, *Charged particles, Measurement, Solar flares, Neutron flux, Magnetic storms, Intensity.

AD-299 319 Div. 2, 6, 8
(TISTW/JEA) OTS price $9.60

Naval Ordnance Lab., White Oak, Md.
THEORY AND RESULTS OF CORRELATION MEASUREMENTS OF ACOUSTIC REFLECTIONS FROM LAKE, RIVER AND OCEAN BOTTOMS,
by J. L. Jones. 8 Nov 62, 107p. (Rept. no. NOLTR 62-196)
Unclassified report

DESCRIPTORS: *Sound transmission, *Underwater sound signals, *Sound ranging, *Echo ranging, *Sound signals, *Ocean bottom, Acoustic ranges, Rivers, Lakes, Reflection, Wave transmission, Numerical analysis, Integration, Statistical functions, Measurement, Experimental data, Signal-to-noise ratio, Acoustical properties, Sonar pulses, Acoustics, Underwater sound, Correlation techniques, Images.

3. CHEMICAL WARFARE EQUIPMENT AND MATERIALS

AD-298 787 Div. 3
(TISTM/ODN) OTS price $1.10

Southern Research Inst., Birmingham, Ala.
(No title).
Monthly progress rept.,
by Robert Collins and Alvin Bird, Jr. 18 Mar 63, 3p. illus.
(Contract DA 18-108-AMC-32-(A))
Unclassified report

DESCRIPTORS: *Chemical warfare agents, Instrumentation, Television cameras, Electrochemistry, Particle size.

AD-299 293 Div. 3
(TISTM/AM) OTS price $8.60

Naval Ammunition Depot, Crane, Ind.
FLARE PERFORMANCE INVESTIGATION,
by Henry C. Lottes. 6 Nov 62, 94p.
(NAVWEPS rept. no. 8250) Unclassified report

DESCRIPTORS: *Flares, *Illumination, *Magnesium, Nitrates, Binders, Statistical distribution, Probability, Mathematical prediction, Tables, Sodium compounds, Strontium compounds, Experimental data, Flammability, Particle size.

Division 4 - CHEMISTRY

4. CHEMISTRY

AD-298 164 Div. 4
(TISTM/ODN) OTS price $5.60

Pennsylvania State U., University Park.
SYNTHESIS AND PROPERTIES OF Cis AND Trans DEUTERIO VINYL CHLORIDE.
Master's thesis,
by Kenneth A. Davis. Dec 62, 51p.
Unclassified report

DESCRIPTORS: *Deuterated compounds, *Polyvinyl chlorides, Molecular isomerism, Polymerization, Liquids, Gases, Phase studies, Chlorides, Mercury compounds, Infrared spectroscopy, Chemical reactions, Synthesis (Chemistry).

AD-298 176 Div. 4
(TISTM/ODN) OTS price $.50

Naval Research Lab., Washington, D. C.
PHOTODEGRADATION OF HIGH POLYMERS. PART IV - PHOTOLYSIS OF POLY(METHYLACRYLATE) IN VACUUM AND IN AIR.
Interim rept.,
by R. B. Fox, L. G. Isaacs and others. 13 Feb 63, 13p. (NRL rept. no. 5894)
Unclassified report

DESCRIPTORS: *Acrylic resins, *Polymers, Mercury lamps, Air, Vacuum apparatus, Molecular weight, Energy, Ultraviolet radiation, Viscosity, Films, Absorption, Photochemistry, Degradation.

AD-298 220 Div. 4
(TISTB/LMH) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
CATALYTIC ACTIVITY OF ORGANIC POLYMERS. II. CATALYTIC PROPERTIES OF A POLYMER OBTAINED BY THE DEHYDROCHLORINATION OF POLYVINYLIDENE CHLORIDE,
by N. P. Keyer and I. V. Astaf'yev. 22 Jan 63, 5p. (Trans. no. FTD-TT-62-1650/1+2+4 from Kinetika i Kataliz, vol. 3, no. 3, pp. 364-365, 1962)
Unclassified report

DESCRIPTORS: *Technological intelligence, *Polymers, Organic materials, Catalysts.

AD-298 235 Div. 4
(TISTM/ODN) OTS price $1.60

Foreign Technology Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
ELECTROSYNTHESIS OF OZONE,
by V. G. Samoylovich and Yu. V. Filippov.
15 Jan 63, 11p. (Trans. no. FTD-TT-62-1536 from Zhurnal Fizicheskoy Khimii 36:7, pp. 1420-1425, 1962)
Unclassified report

DESCRIPTORS: *Ozone, Electric discharges, Chemical reactions, Decomposition, Test equipment, Synthesis (Chemistry).

AD-298 238 Div. 4
(TISTM/BRW) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
OBTAINING ELEMENTAL BORON BY HYDROGEN REDUCTION OF BORON HALIDES,
by L. A. Nisel'son, I. V. Petrusevich and others.
17 Jan 63, 10p. (Trans. no. FTD-TT-62-1638; Trans. from Zhurnal Prikladnoy Khimii, vol. 35, no. 5, pp. 984-989, 1962)
Unclassified report

DESCRIPTORS: *Boron, *Boron compounds, Hydrogen, Production, Halides, Reduction.

AD-298 572 Div. 4
(TISTM/EJH) OTS price $1.10

Pennsalt Chemicals Corp., Philadelphia, Pa.
HIGH PRESSURE PREPARATION OF SOLID CS2 FROM THE ELEMENTS,
by M. S. Silverman and J. R. Soulen. Feb 63, 2p. (Technical rept. no. 34)
(Contract Nonr-268700)
Unclassified report

DESCRIPTORS: *Carbon compounds, *Sulfides, *High pressure research, Powders, Graphite, Sulfur, Solids, Chemical reactions, Infrared spectroscopy, Synthesis (Chemistry).

AD-298 593 Div. 4
(TISTM/EJH) OTS price $9.10

Aerospace Corp., Los Angeles, Calif.
PROPULSION RESEARCH PROGRAM. HYDRIDE AND FLUORIDE INVESTIGATIONS, PART I. HYDRIDE INVESTIGATIONS.
Semiannual technical rept., 1 July-31 Dec 61,
by P. Breisacher, S. G. Gibbins, and B. Siegel.
9 Feb 62, 93p. (Rept. no. TDR-930(2210-12)TR-1, pt. 1)
(Contract AF 04(647)930)
(DCAS TDR 62-4) Unclassified report

DESCRIPTORS: *Hydrides, *Metalorganic compounds, *Organic compounds, *Complex compounds, Hydrogen, Chemical reactions, Atoms, Molecules, Metals, Vapors, Transition elements, Stability, Mass spectroscopy, Rocket propellants, Laboratory equipment, Bibliographies, Synthesis (Chemistry).

AD-298 657 Div. 4
(TISTM/ODN) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
THERMAL DECOMPOSITION AND BURNING OF AMMONIUM PERCHLORIDE,
by A. A. Shidlovskiy and L. F. Shmagin.
19 Feb 63, 8p. (Trans. no. FTD-TT-62-1902 from Izvestiya Vysshikh Uchebnikh Zavedeniy, Khmiya i Khimicheskaya Tekhnologiya, vol. 5, no. 4, pp. 529-532, 1962)
Unclassified report

DESCRIPTORS: *Ammonium compounds, *Pyrolysis, Catalysis, Catalysts, Inorganic compounds, Decomposition, Potassium compounds, Chromates, Manganese compounds, Oxides, Permanganates, Copper compounds, Chlorides, Combustion, Perchlorates.

AD-298 661 Div. 4, 10
(TISTM/ODN) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
DETECTING ELEMENTAL SULFUR IN REACTIVE FUELS,

by A. G. Ryasnyanskaya. 12 Feb 63, 7p. (Trans. no. FTD-TT-62-1451 from Khimiya Seraorganicheskikh Soyedineniy, Soderzhashchikhsya v Neftyakh i Nefteproduktakh, vol. 4, pp. 71-74, 1961)
Unclassified report

DESCRIPTORS: *Sulfur, *Jet engine fuels, Chemical analysis, Mixtures, Volumetric analysis, Impurities.

AD-298 938 Div. 4
(TISTM/EJH) OTS price $1.60

Naval Research Lab., Washington, D. C.
SYNTHESIS OF OMEGA-HALOHEXADECANOIC ACIDS,
by T. R. Price and R. B. Fox. 13 Feb 63, 10p. (NRL rept. no. 5872)
Unclassified report

DESCRIPTORS: *Organic compounds, *Synthesis (Chemistry), Chlorides, Bromides, Iodides, Chemical reactions, Condensation reactions, Hydrolysis, Exchange reactions, Ozone, Reduction (Chemistry).

AD-298 955 Div. 4, 14
(TISTM/EJH) OTS price $1.60

Picatinny Arsenal, Dover, N. J.
PREPARATIVE STUDIES OF LINEAR POLYMERS CONTAINING ALUMINUM,
by Walter J. Erich. Mar 63, 19p. (Technical memo. no. 1060)
(DA Proj. 599-25-001)
Unclassified report

DESCRIPTORS: *Heat-resistant plastics, *Polymers, *Organic compounds, *Aluminum compounds, Polymerization, Molecular structure, Thermal stresses, Stability, Metalorganic compounds, Synthesis (Chemistry).

AD-299 251 Div. 4, 3
(TISTM/ODN) OTS price $2.60

Harvard U., Cambridge, Mass.
STRUCTURAL AND SYNTHETIC STUDIES ON TETRODOTOXIN.
Final rept., 15 Nov 61-14 Nov 62,
by R. B. Woodward. 14 Nov 62, 18p.
(Grant DA-CML-18-108-G-45)
Unclassified report

DESCRIPTORS: *Toxins, *Organic compounds, *Chemical warfare agents, Pyrolysis, Degradation, Mass spectroscopy, Chemical bonds, Catalysis, Molecular structure, Acylation.

AD-299 294 Div. 4
(TISTM/AM) OTS price $6.60

Monsanto Research Corp., Everett, Mass.
RESEARCH FOR HIGH TEMPERATURE ELASTOMERIC INSULATION MATERIALS.
Quarterly progress rept. no. 2, 15 Aug-15 Nov 62,
by Lucius Gilman, John E. Wyman and others.
26 Nov 62, 56p. (Rept. no. MRB2021Q2)
(Contract AF 33(657)8774, Proj. 62-6899-7340)
Unclassified report

DESCRIPTORS: *Elastomers, *Pyrolysis, Tables, Butyl rubber, Acrylonitrile polymers, Nitrile rubber, Styrene plastics, Chemical analysis, Plastics, High-temperature research, Thermal insulation.

AD-299 308 Div. 4, 14
(TISTM/ODN) OTS price $1.60

Naval Ordnance Lab., White Oak, Md.
THE REACTION OF ALLYLTRICHLOROSILANE WITH GLYCIDYL METHACRYLATE,
by Robert Brown. 27 Dec 62, 9p. (Rept. no. NOL-TR-62-166)
(Proj. PR-4)
Unclassified report

DESCRIPTORS: *Polymers, *Silicon compounds, *Silanes, Polymerization, Infrared spectroscopy, Volume, Spectra (Infrared), Gravimetric analysis, Heat, Silicone plastics, Electrical properties, Synthesis (Chemistry), Chemical reactions.

5. COMMUNICATIONS

AD-298 167 Div. 5, 8, 12
(TISTE/JWS) OTS price $5.60

Melpar Inc., Falls Church, Va.
LONG RANGE COMMUNICATIONS INTERFERENCE STUDY. Technical note no. 4 on Radio Frequency Interference in Digital Two-Phase Coherent Communication Systems,
by Arthur Krinitz. Mar 63, 47p. (Technical note no. 4)
(Contract AF 30(602)2528)
(RADC TDR 62-360, vol. 4) Unclassified report

DESCRIPTORS: *Radio interference, *Radio communication systems, *Digital systems, *Microwave relay systems, Special functions, Statistical functions, Communication satellites (Active), Communication satellites (Passive), Signal-to-noise ratio.

AD-298 281 Div. 5, 8
(TISTM/PCR) OTS price $4.60

Electrical Engineering Research Lab., U. of Illinois, Urbana.
MAXIMIZING THE SIGNAL-TO-NOISE RATIO OF A LINEAR RECEIVING ANTENNA ARRAY,
by Robert H. MacPhie. Jan 63, 44p. (Technical rept. no. 65)
(Contract AF 33(657)10474, Proj. 6278)
Unclassified report

DESCRIPTORS: *Antennas, *Signal-to-noise ratio, Equations, Frequency analyzers, Integral equations, Noise (Radio), Radio equipment, Integral transforms, Matrix algebra, Mathematical analysis.

AD-298 298 Div. 5, 8
(TISTM/JEA) OTS price $1.10

Microwave Research Inst., Polytechnic Inst. of Brooklyn, N. Y.
MEASUREMENT OF IONOSPHERIC PATHS AS A TIME-VARYING NETWORK.

Division 5 - COMMUNICATIONS

Scientific rept. no. 2,
by Arthur E. Laemmel. 13 Dec 62, 7p.
(Research rept. no. PIBMRI-1102-62)
(Contract AF 19(628)375, Proj. 4691)
(AFCRL 63-14) Unclassified report

DESCRIPTORS: *Radio signals, *Radio waves, *Radio transmitters, *Pulse transmitters, *Multipath transmission, Correlation techniques, Linear systems, Statistical functions, Doppler effect, Low-pass filters, High frequency, Frequency-shift keyers, Networks, Radio transmission, Ionospheric propagation, Multipath transmission, Pulse modulation, Ionosphere.

AD-298 309 Div. 5, 8, 16, 28
(TISTB/AW) OTS price $6.60

Royal Inst. of Tech. (Sweden).
SPEECH ANALYSIS AND SYNTHESIS.
Final rept.,
by C. G. M. Fant. 31 Jan 62, 64p.
(Contract AF 61(052)342)
(AFCRL 62-790) Unclassified report

DESCRIPTORS: *Speech transmission, *Speech, *Speech representation, Communication theory, Voice communication systems, Narrowband, Analysis.

AD-298 553 Div. 5
(TISTB/AW) OTS price $2.60

Princeton U., N. J.
THE COMMAND AND CONTROL STRUCTURE.
Rept. on Econometric Research Program,
by Oskar Morgenstern. 15 Oct 62, 25p. (Research memo. no. 47)
(Contract Nonr-185816)
Unclassified report

DESCRIPTORS: *Command and control systems, *Communication systems, Vulnerability, Feedback, Reliability, Accidents, Effectiveness, Nuclear warfare.

AD-298 585 Div. 5, 8
(TISTE/OHD) OTS price $3.60

Stelma Inc., Stamford, Conn.
DEVELOPMENT OF DIPHASE PCM CABLE SYSTEM.
Quarterly progress rept. no. 2, 16 Sep-15 Dec 62,
by R. Couturier. 15 Dec 62, 28p. (Rept. no. 2)
(Contract DA 36-039-sc-90780, Proj. 3B55-01-001)
Unclassified report

DESCRIPTORS: *Data transmission systems, *Electric cables, *Transmission lines, Pulse communication systems, Crystal oscillators, Design, Transistor amplifiers, Multiplex, Digital systems.

AD-298 623 Div. 5, 8
(TISTE/OHD) OTS price $6.60

Melpar, Inc., Falls Church, Va.
LONG-RANGE COMMUNICATIONS INTERFERENCE STUDY.
Final rept.,
by Sampson Seideman. Mar 63, 61p.
(Contract AF 30(602)2528, Proj. 4540)
(RADC TDR 62-411) Unclassified report

DESCRIPTORS: *Radio interference, *Satellite networks, Vulnerability, S band, X band, Phase modulation, Digital systems, Parametric amplifiers, Mathematical analysis, Global communication systems, Communication satellites (Passive).

AD-298 759 Div. 5, 7, 12
(TISTE/JBM) OTS price $8.10

General Electric Co., Philadelphia, Pa.
CONFIGURATION STRUCTURE AND SUBSYSTEM ENGINEERING ANALYSIS REPORT. SECTION 7: ELECTRICAL POWER AND DISTRIBUTION SUBSYSTEM ENGINEERING ANALYSIS.
12 Oct 62, 1v. (Rept. no. 62SD4300, vol. 13)
(Contract AF 04(647)476, Proj. ADVENT)
Unclassified report

DESCRIPTORS: *Communication satellites (Active), *Power equipment, *Solar cells, Radiation damage, Distribution, Solar flares, Selection, Test methods, Power supplies, Voltage regulators, Tests.

AD-298 760 Div. 5, 12, 30
(TISTE/JBM) OTS price $12.00

General Electric Co., Philadelphia, Pa.
CONFIGURATION STRUCTURE AND SUBSYSTEM ENGINEERING ANALYSIS REPORT. SECTION 9. AGE ENGINEERING ANALYSIS.
Report on Communication Satellite,
by J. D. Selby. 12 Oct 62, 1v. (Rept. no. 62SD4300, Vol. 17)
(Contract AF 04(647)476, Project ADVENT)
Unclassified report

DESCRIPTORS: *Communication satellites (Active), *Ground support equipment, *Checkout equipment, Test equipment, Control simulators, Wiring diagrams, Simulation, Test methods, Models (Simulations), Programming (Computers), Power supplies, Containers, Control.

AD-298 939 Div. 5, 2
(TISTP/TL) OTS price $4.60

Army Missile Command, Redstone Arsenal, Huntsville, Ala.
PARAMETERS OF A LONG-RANGE TROPOSPHERIC FORWARD SCATTER LINK,
by Roger R. Burrows. 5 Mar 63, 39p. (Rept. no. RE-TR-63-2)
Unclassified report

DESCRIPTORS: *Troposphere, *Electromagnetic waves, *Communication systems, *Radio signals, Parabolic antennas, L band, Radio interference, Scattering, Detection, Signal-to-noise ratio, Refraction.

AD-299 147 Div. 5, 6
(TISTE/OHD) OTS price $5.60

Philco Corp., Palo Alto, Calif.
MAINTAINABILITY TEST AND DEMONSTRATION PLAN FOR NEW HAMPSHIRE STATION MULTI-SATELLITE AUGMENTATION PROGRAM, PHASE ''A''.
Technical operating rept.
25 Jan 63, 1v. (Rept. no. WDL-TR-2025)
(Contract AF 04(695)113)
Unclassified report

DESCRIPTORS: *Ground support equipment, *Reliability, Tests, Control systems, Display systems, Tracking, Satellite networks, Maintenance.

AD-299 219 Div. 5, 8
(TISTE/OHD) OTS price $10.10

Bell Telephone Labs., Inc., Whippany, N. J.
WEAK-SIGNAL COMMUNICATION TECHNIQUES.

Interim rept., 1 May 61-30 Apr 62 on Phase 1,
by P. M. Dollard, I. Jacobs and others.
30 Apr 62, 121p.
(Contract AF 33(616)8272)
Unclassified report

DESCRIPTORS: *Communication theory, *Radio reception, *Radio signals, Frequency-shift keyers, Frequency modulation, Phase-locked communication systems, Errors, Corrections, Radio communication systems, Feedback, Radio interference, Digital systems, S band, X band, Mathematical analysis, Signal-to-noise ratio.

AD-299 248 Div. 5, 8
(TISTP/TL) OTS price $13.00

Georgia Inst. of Tech., Engineering Experiment Station, Atlanta.
AUTOMATED SOLUTION OF COMBINED INTERFERENCE MATRICES.
Final rept., 15 Nov 61-15 Nov 62,
by I. E. Perlin, R. Techo and others. 15 Nov 62, 178p.
(Contract DA 36-039-sc-88920, Proj. A-596)
Unclassified report

DESCRIPTORS: *Communication systems, *Matrix algebra, *Communications theory, *Communication equipment, Digital computers, Programming (Computers), Networks, Interference.

AD-299 387 Div. 5
(TISTE/JBM) OTS price $19.75

Ohio State U., Research Foundation, Columbus.
A STUDY OF WRITTEN COMMUNICATION (APPENDIX V - TEST MATERIALS).
Final rept.,
by Franklin H. Knower. Nov 62, 1v. (Rept. no. 4, vol. 3)
(Contract AF 30(602)2550, Proj. 4599)
(RADC TDR 62-611, vol. 3) Unclassified report

DESCRIPTORS: *Communication systems, *Instruction manuals, Airborne, Aircraft, Antennas, Attenuation, Air traffic control systems, Data transmission systems, Ground support equipment, Handbooks, Hazards, Ground-controlled approach radar, Multiplex, Operation, Teletype systems, Transmitter-receivers, Propagation, Maintenance, Maintenance equipment, Radio communication systems, Radio beacons, Radio navigation, Radio transmitters, Reliability (Electronics), Scattering, Telephone communication systems, Telephone equipment, Troposphere, Voice communication systems, Communication equipment.

6. DETECTION

AD-298 168 Div. 6, 12
(TISTA/GEC) OTS price $9.60

Philco Corp., Palo Alto, Calif.
MILESTONE 5. MSAP TRACKING STATION COMPUTER PROGRAM (OPERATIONAL) COMPUTER SUBPROGRAMS.
7 March 63, 112p. (Rept. no. WDL-TR2036)
(Contract AF 04(695)177)
Unclassified report

DESCRIPTORS: *Radar tracking, *Telemeter systems, Tracking, Satellites (Artificial), Programming (Computers), Orbital trajectories.

AD-298 170 Div. 6
(TISTW/RD) OTS price $1.60

Army Ordnance Arsenal, Philadelphia, Pa.
PORTABLE LASER RANGEFINDER; BATTERY SELECTION CRITERIA,
by Joseph T. Lehman. 22 Jan 63, 13p. (Test rept. no. T63-6-1)
(DA Proj. 513-07-010)
Unclassified report

DESCRIPTORS: *Lasers, *Range finding, *Batteries and components, Portable.

AD-298 216 Div. 6, 3
(TISTE/JBM) OTS price $1.10

Foreign Technology Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
A MULTICHANNEL PHASE SYSTEM,
by V. G. Dolotov. 24 Jan 63, 4p. (Trans. no. FTD-TT-62-1636 from Soviet Patent no. 145919, (722250/26), 18 Mar 61)
Unclassified report

DESCRIPTORS: *Telemeter system, Phase meters, Frequency converters, Phase shifters, Frequency multipliers, Circuits, Multipath transmission.

AD-298 266 Div. 6, 8
(TISTW/PCR) OTS price $14.00

Cornell U. School of Electrical Engineering, Ithaca, N. Y.
A METHOD OF NOISE REDUCTION FOR LINEAR BEAM MICROWAVE DEVICES OF MEDIUM POWER.
Rept. on Microwave Noise,
by W. R. Curtice. 15 Aug 62, 193p. (Technical rept. no. 9; Research rept. no. EE-535)
(Contract DA 36-039-sc-87368)
Unclassified report

DESCRIPTORS: *Microwave equipment, *Beams (Electromagnetic), *Noise (Radar), Theory, Focusing, Waveguides, Backward wave tubes, Traveling-wave tubes, Klystrons, Microwave oscillators, Mixers (Electronic), Mathematical analysis, Equations, Modulation, Reduction.

AD-298 294 Div. 6, 8
(TISTW/RD) OTS price $9.10

Microwave Research Inst., Polytechnic Inst. of Brooklyn, N. Y.
PROBABILITY DISTRIBUTION AT THE OUTPUT OF A LOGARITHMIC RECEIVER,
by Samuel Geldston. 4 Oct 62, 102p. (Research rept. no. PIBMRI-1087-62)
(Grant AFOSR-62-295)
Unclassified report

DESCRIPTORS: *Radar receivers, Radar signals, Bessel functions, Distribution theory, Special functions (Mathematical), Probability, Integral equations, Functions, Noise (Radar), Signal-to-noise ratio, Mathematical analysis, Analog systems.

AD-298 604 Div. 6, 8
(TISTE/OHD) OTS price $1.60

Sonics Corp., Cambridge, Mass.
PIEZOELECTRIC CONVERTER INVESTIGATION.

Quarterly rept. no. 4, 1 Dec 62-28 Feb 63,
by Anthony Antonuzzi. 28 Feb 63, 11p.
(Contract AF 33(657)8282)
Unclassified report

DESCRIPTORS: *Electroacoustic transducers, *Piezoelectric transducers, Measurement, Theory, Mathematical analysis, Noise, Jet engine noise, Test methods, Ceramic materials.

AD-298 710 Div. 6, 30
(TISTW/RD) OTS price $7.60

Travelers Weather Research Center, Hartford, Conn.
A PROGRAM FOR THE ASSEMBLY AND DISPLAY OF RADAR-ECHO DISTRIBUTIONS,
by Edwin Kessler, III and John A. Russo, Jr.
Oct 62, 73p. (Technical publication no. 21; Rept. no. 7044-41)
(Contract FAA/BRD-363)
Unclassified report

DESCRIPTORS: *Radar signals, *Radar echo areas, Digital computers, Radar antennas, Radar scanning, Coding, Data processing systems, Display systems.

AD-298 714 Div. 6, 25
(TISTW/RD) OTS price $21.00

Dayton U. Research Inst., Ohio.
MEASUREMENTS OF THE OPTICAL MEAN HORIZONTAL REFLECTION POWER IN THE NEAR FIELD FROM STANDARD GEOMETRICAL BODIES AND SURFACES WHEN ILLUMINATED WITH INCOHERENT LIGHT.
Quarterly progress rept. no. 1, 1 July-30 Sep 62,
by Werner Rambauske, R. Michael Hord, and Ronald R. Grunzel. 30 Sep 62, 393p.
(Contract AF 33(657)9014)
Unclassified report

DESCRIPTORS: *Lasers, *Radar, Reflection, Light, Solids, Surfaces, Spheres, Cylindrical bodies, Metal plates, Optical analysis.

AD-299 081 Div. 6
(TISTW/JEA) OTS price $3.60

Office of Research Analyses, Holloman Air Force Base, N. Mex.
THE COMBINED EFFECT OF REFRACTION, DOPPLER SHIFT, ABERRATION, AND LIGHT DRAG ON SIGNALS REFLECTED FROM MISSILES,
by Bruno Manz. Mar 63, 31p. (Technical rept. no. ORA-63-5)
Unclassified report

DESCRIPTORS: *Radar echo areas, *Radar signals, *Guided missiles, Refraction, Transformation (Mathematics), Doppler effect, Light, Phase studies, Refractive index, Continuum mechanics, Wave transmission, Mirrors, Distortion, Radar reflections.

AD-299 355 Div. 6
(TISTW/PCR) OTS price $3.60

Aerospace Corp., Los Angeles, Calif.
ULTRAVIOLET RADIOMETER EXPERIMENT FOR THE TARGET RADIATION MEASUREMENT PROGRAM (TRUMP).
Semiannual rept., 1 July-31 Dec 62,
by R. D. Rawcliffe, G. E. Meloy, and R. L. Williams. 6 Feb 63, 29p. (Rept. no. TDR-169(3260-50)TN-1)
(Contract AF 04(695)169)
(SSD TDR 63-21) Unclassified report

DESCRIPTORS: *Radiometers, *Guided missile detection, Ultraviolet filters, Ultraviolet detectors, Photomultipliers, Design, Calibration, Power supplies, Amplifiers, Ultraviolet radiation, Ultraviolet equipment.

7. ELECTRICAL EQUIPMENT

AD-298 267 Div. 7, 1
(TISTA/FRL) OTS price $2.50

Systems Technology, Inc., Inglewood, Calif.
SENSITIVITY AND MODAL RESPONSE FOR SINGLE-LOOP AND MULTILOOP SYSTEMS.
Final rept.,
by D. T. McRuer and R. L. Stapleford. Jan 63, 105p.
(Contract AF 33(616)8024, Proj. 8219)
(ASD TDR 62-812) Unclassified report

DESCRIPTORS: *Servomechanisms, Analysis, Sensitivity, Functions, Linear systems, Differential equations, Theory, Control systems, Feedback.

AD-298 291 Div. 7
(TISTM/BRW) OTS price $6.60

General Electric Co., Schenectady, N. Y.
SOLID TANTALUM CAPACITOR.
Final engineering rept.,
by Jack M. Law and William C. Richards. 1962, 61p.
(Contract NObsr-85470)
Unclassified report

DESCRIPTORS: *Tantalum capacitors, Tantalum alloys, Tantalum compounds, Carbides, Foils, Electrical properties, Production.

AD-298 641 Div. 7, 8, 25
(TISTE/OHD) OTS price $3.60

Ion Physics Corp., Burlington, Mass.
FEASIBILITY AND DESIGN STUDY FOR THE 1 KW/5 KW ELECTROSTATIC GENERATORS.
Quarterly technical progress rept. no. 3,
by C. N. Coenraads, F. J. McCoy and others.
31 Jan 63, 27p.
(Contract AF 33(616)7230, Proj. 0(3-3145))
Unclassified report

DESCRIPTORS: *Electrostatic generators, Electric insulation, Electrodes, Titanium, Contamination, Seals (Stoppers), Vacuum seals, Vacuum apparatus, Electric fields, Electric potential, Electric discharges, Epoxy plastics, Aluminum, Ceramic coatings, Capacitance, Power equipment.

AD-298 653 Div. 7, 26
(TISTE/OHD) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
ON ONE SYSTEM OF STEP-TYPE EXTREMAL CONTROL,

by Ye. D. Garber. 13 Feb 62, 12p. (Trans. no. FTD-TT-62-1884 from Energetika i Avtomatika, No. 5, pp. 169-173, 1960)
Unclassified report

DESCRIPTORS: *Control systems, Effectiveness, Analysis, Stability, Theory.

AD-298 758 Div. 7, 12
(TISTE/OHD) OTS price $8.60

General Electric Co., Philadelphia, Pa.
COMMUNICATION SATELLITE. PROJECT ADVENT. CONFIGURATION STRUCTURE AND SUBSYSTEM ENGINEERING ANALYSIS REPORT. SECTION 7 - ELECTRICAL POWER AND DISTRIBUTION SUBSYSTEM ENGINEERING ANALYSIS, by J. D. Selby. 12 Oct 62, 1v. (Document no. 62SD4300, vol. 12)
(Contract AF 04(647)476)
Unclassified report

DESCRIPTORS: *Power equipment, *Electric power production, Solar cells, Storage batteries, Weight, Reliability, Life expectancy, Design, Electric currents, Nickel, Cadmium, Control systems, Transistor amplifiers, Circuits, Wiring diagrams, Communication satellites (Active), Distribution.

AD-298 768 Div. 7
(TISTM/BRW) OTS price $3.60

Lockheed Aircraft Corp., Sunnyvale, Calif.
BASIC STUDIES ON FUEL CELLS SYSTEMS.
Quarterly rept. no. 1, 19 May-15 Aug 61, by G. B. Adams, Jr. 15 Aug 61, 33p. (Rept. no. 1)
(Contract NOw 60-0738-d)
Unclassified report

DESCRIPTORS: *Fuel cells, *Organic compounds, Fuels, Ammonium compounds, Butanes, Oxygen, Oxidizers, Power supplies, Electrochemistry.

AD-298 942 Div. 7, 4
(TISTM/AM) OTS price $3.60

Little, Arthur D., Inc., Cambridge, Mass.
LOW TEMPERATURE OPERATION OF BATTERIES.
Quarterly progress rept. no. 2, 15 Aug-14 Nov 62, by R. A. Horne and I. A. Black. 14 Nov 62, 35p.
(Contract DA 36-039-sc-90706, Proj. 3A99-09-002-02)
Unclassified report

DESCRIPTORS: *Batteries & components, *Low-temperature research, *Thermal insulation, Electrochemistry, Tables, Experimental data, Effectiveness, Heating, Power supplies, Polar regions, Heat transfer, Styrene plastics.

AD-298 983 Div. 7, 8, 25
(TISTE/OHD) OTS price $9.60

Allison Div., General Motors Corp., Indianapolis, Ind.
INVESTIGATION OF THE MONOCAPILLARY THERMIONIC EMITTER AS A DUAL SOURCE OF IONS AND ELECTRONS.
Quarterly technical progress rept. no. 4, 15 Aug 62-15 Feb 63, by D. L. Dresser and W. Laurita. 15 Feb 63, 98p. illus. (Rept. no. EDR 3207)
(Contract AF 33(616)8299, Proj. 8173)
Unclassified report

DESCRIPTORS: *Thermionic emission, Ionic current, Electron beams, Temperature, Thermoelectricity, Analysis, Plasma sheath, Analog computers, Cesium.

AD-299 020 Div. 7, 17, 25
(TISTE/OHD) OTS price $6.00

Melpar Inc., Falls Church, Va.
ELECTRICAL CONDUCTORS AT ELEVATED TEMPERATURES.
Final rept. on Applied Research in Electrical, Electronic and Magnetic Materials, by Nicholas Fuschillo and Russel A. Lindberg. Jan 63, 455p.
(Contract AF 33(616)8386, Proj. no. 7371)
(ASD-TDR-62-481) Unclassified report

DESCRIPTORS: *Electric wire, *Metals, *Alloys, Oxidation, Nechanical properties, Tables, High-temperature research, Electrical conductance.

AD-299 024 Div. 7, 8
(TISTM/AM) OTS price $9.60

Westinghouse Electric Corp., Dayton, Ohio.
RESEARCH ON IMPROVED SOLAR GENERATOR.
Final rept., Oct 61-Oct 62, ed. by K. S. Tarneja. Jan 63, 109p.
(Contract AF 33(657)7649, Proj. 8173)
(ASD TDR 62-1000) Unclassified report

DESCRIPTORS: *Solar cells, *Semiconductors, Energy conversion, Solar radiation, Electron transitions, Equations, Preparation, Reduction (Chemistry), Tables, Theory, Effectiveness, Photoelectric cells (Semiconductor), Silicon.

AD-299 266 Div. 7, 8, 25
(TISTE/OHD) OTS price $9.10

Arnold Engineering Development Center, Arnold Air Force Station, Tenn.
DEVELOPMENTS IN INDUCTIVE ENERGY STORAGE APPARATUS AND INITIAL HIGH CURRENT, HIGH DENSITY ARC EXPERIMENTATION AND ANALYSIS.
Final rept., by W. G. Dow, W. N. Lawrence, and I. W. Rozian. Mar 63, 99p. (Rept. no. AEDC TDR 63-60)
(Contract AF 40(600)934, Proj. 8950)
Unclassified report

DESCRIPTORS: *Power supplies, *Electric arcs, Control systems, Fuses (Electrical), Instrumentation, Electric switches, Circuits, High-pressure research, Electric currents, Nitrogen

AD-299 289 Div. 7, 26
(TISTE/OHD) OTS price $4.60

Burndy Corp., Norwalk, Conn.
PRODUCTION ENGINEERING OF TRIAXIAL PULSE CONNECTORS.
Quarterly progress rept. no. 6, 16 Sep-15 Dec 62, by Maxwell E. Peel. 15 Feb 63, 41p.
(Contract DA 36-039-sc-85964)
Unclassified report

DESCRIPTORS: *Electric connectors, *Manufacturing methods, Reliability, Electric insulation, Tests, Adhesives, Coaxial cables.

AD-299 301 Div. 7, 26
(TISTM/ODN) OTS price $1.10

Cornell-Dubilier Electric Corp., New Bedford, Mass.
PEM FOR PRODUCTION OF FLUORINATED BARIUM TITANATE CAPACITORS FOR OPERATION TO 200 DEGREES C.
Quarterly rept. no. 7, by J. Souza. 27 Jan 63, 1v.
(Contract DA 36-039-sc-85955)
Unclassified report

DESCRIPTORS: *Ceramic capacitors, Barium compounds, Titanates, Fluorination, Dielectrics, Silicone plastics, Encapsulation, Synthetic rubber, Capacitance, Military requirements, Production.

8. ELECTRONICS AND ELECTRONIC EQUIPMENT

AD-298 219 Div. 8
(TISTA/SER) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
A METHOD OF CODING MESSAGES BY STATISTICAL CODE.
by V. A. Garmash. 22 Jan 62, 4p. (Trans. no. FTD-TT-62-1637 from Soviet Patent No. 147024 (646826/26), 10 Dec 59)
Unclassified report

DESCRIPTORS: *Communication theory, *Coding.

AD-298 295 Div. 8
(TISTW/PCR) OTS price $5.60

Sperry Gyroscope Co., Great Neck, N. Y.
SHALLOW DONOR EMISSION CATHODE STUDY.
Final rept., Apr 61-Sep 62,
by J. K. Gorman and H. T. Minden. Oct. 62, 45p.
(Rept. no. NA-8250-8328)
(Contract AF 30(602)2495, Proj. 5573)
(RADC TDR 62-509) Unclassified report

DESCRIPTORS: *Cathodes (Electron tubes), Thermionic emission, Photoelectric effect, Field emission, Electric insulation, Thin films (Storage devices), Barium compounds, Oxides, Oxide cathodes, Rare earths, Semiconductors, Secondary emission, Theory, Emissivity.

AD-298 296 Div. 8
(TISTP/WH) OTS price $2.60

RAND Corp., Santa Monica, Calif.
ON APPROXIMATING LINEAR ARRAY FACTORS,
by Worthie Doyle. Feb 63, 19p. (Memo. no. RM-3530-PR)
(Contract AF 49(638)700, Proj. RAND)
Unclassified report

DESCRIPTORS: *Electronic scanners, *Radar antennas, Antenna lobes, Least squares method, antenna radiation patterns, Antennas.

AD-298 300 Div. 8
(TISTW/RD) OTS price $7.60

Martin-Marietta Corp., Baltimore, Md.
OPTIMUM APERTURE STUDY.
Quarterly rept. no. 3,
by E. Lefferts. Feb 63, 1v. (Research memo. no. RM-233)
(Contract AF 30(602)2676)
(RADC TDR 63-10) Unclassified report

DESCRIPTORS: *Antennas, Antenna radiation patterns, Functions, Integrals, Theory, Mathematical analysis.

AD-298 301 Div. 8
(TISTW/RD) OTS price $2.60

Hughes Aircraft Co., Culver City, Calif.
SPATIAL FREQUENCY CHARACTERISTICS OF FINITE APERTURE ANTENNAS.
Scientific rept. no. 1,
by A. Ksienski. July 62, 24p.
(Contract AF 19(628)333, Proj. 4600)
(AFCRL 62-975) Unclassified report

DESCRIPTORS: *Antennas, Mathematical analysis, Theory, Images, Information retrieval.

AD-298 552 Div. 8
(TISTE/OHD) OTS price $2.60

Army Electronics Research and Development Lab., Fort Monmouth, N. J.
THE EFFECTS OF PULSE NUCLEAR RADIATION ON QUARTZ CRYSTAL UNITS,
by Joseph M. Stanley. Nov 62, 24p. (Technical rept. no. 2320)
Unclassified report

DESCRIPTORS: *Quartz resonators, *Crystal oscillators, Nuclear reactors, Test methods, Measurement, Frequency, Linear accelerators, Radiation damage.

AD-298 560 Div. 8
(TISTE/OHD) OTS price $9.60

General Telephone and Electronics Labs., Inc., Bayside, N. Y.
DEVELOPMENT OF IMPROVED GALLIUM ARSENIDE POINT CONTACT VARACTOR DIODES FOR OPERATION AT X-BAND AND ABOVE.
Final rept.,
by San-Mei Ku, Francesco Drago, and R. D. Harrison. 6 Jan 62, 115p. (Technical rept. no. TR-62-211)
(Contract NObsr-85297)
Unclassified report

DESCRIPTORS: *Diodes (Semiconductor), *Parametric amplifiers, X band, Gallium compounds, Arsenides, Capacitance, Theory, Resistance (Electrical), Materials, Design, Test sets, Variable capacitors.

AD-298 571 Div. 8
(TISTW/RD) OTS price $8.10

General Electric Co., Syracuse, N. Y.
AIR WEAPONS CONTROL SYSTEM 412L.
Quarterly reliability program rept. no. 8.
31 Dec 62, 84p. (Rept. no. AWCS-SQR-8)
(Contract AF 19(628)513)
Unclassified report

DESCRIPTORS: *Reliability (Electronics), *Aircraft intercept control systems, *Antiaircraft defense systems, Telemetering systems, Radar equipment, Communication equipment, Failure (Mechanics), Life expectancy, Data processing systems, Semiconductors, Radio equipment, Electronic equipment, Reliability.

AD-298 592 Div. 8, 6, 2
(TISTW/RD) OTS price $2.60

Aerospace Information Div., Washington, D. C.
TRACKING OF MISSILES AND SPACE VEHICLES. REVIEW OF SOVIET LITERATURE.
21 Feb 63, 23p. (AID rept. no. P-63-24; Series rept. no. 19)
Unclassified report

DESCRIPTORS: *Radio astronomy, *Ionospheric disturbances, *Radar reflections, *Propagation, *Guided missiles, *Satellites (Artificial), Magnetohydrodynamics, Plasma physics, Paramagmetic resonance, Magnetic pinch, Electromagnetic wave reflections, Scattering, Ionosphere, Electromagnetic waves, Radio waves, Very high frequency, Moving-target indicators, Electron density, Meteors, Solar radiation, Radio transmission, Polar regions, Very low frequency, Tracking.

AD-298 594 Div. 8
(TISTP/FR) OTS price $1.10

Kiruna Geophysical Observatory (Sweden).
AURORAL ZONE SATELLITE SCINTILLATION STUDIES,
by Ludwik Liszka. 10 July 62, 6p. (Scientific rept. no. 4)
(Contract AF 61(052)601)
(AFCRL-62-1054) Unclassified report

DESCRIPTORS: *Radio waves, *Radio transmission, *Ionosphere, Satellites (Artificial), High frequency, Very high frequency, Attenuation.

AD-298 608 Div. 8, 26
(TISTE/JBM) OTS price $4.60

Motorola, Inc., Phoenix, Ariz.
PRODUCTION ENGINEERING MEASURE ON 400 Mc, 300 mW POWER TRANSISTOR.
Quarterly rept. no. 6, step 1, 23 Sep-23 Dec 62,
by R. A. Jacobs and John C. Howe. 23 Dec 62, 31p.
(Contract DA 36-039-sc-85975)
Unclassified report

DESCRIPTORS: *Transistors, Power, Production, Manufacturing methods, Packaged circuits, Bonding, Processing, Failure (Mechanics), Resistance (Electrical), Specifications, Electric potential, Electric currents, Capacitance, Ultrahigh frequency, Temperature, Tests, Mechanical properties, Germanium.

AD-298 614 Div. 8, 25
(TISTE/OHD) OTS price $2.60

Laboratories for Applied Sciences, U. of Chicago, Ill.
ANGULAR ENERGY DISTRIBUTION OF PHOTOELECTRONS.
Quarterly progress rept., 16 Apr-16 July 62. Aug 62, 20p. (Rept. no. LAS-SR-224-4)
(Contract DA 44-009-eng-5004)
Unclassified report

DESCRIPTORS: *Photoelectric effect, *Photoelectrons, Measurement, Test methods, Vacuum apparatus, Magnetic fields, Deflection, Electron tubes, Cesium alloys, Antimony alloys, Distribution, Energy.

AD-298 621 Div. 8
(TISTE/CAM) OTS price $2.60

Knights, James, Co., Sandwich, Ill.
RESEARCH AND DEVELOPMENT ON PRECISION GLASS CRYSTAL UNITS IN THE FREQUENCY RANGE OF 5 TO 10 MC.
Quarterly progress rept. no. 1, 1 Sep-30 Nov 62 on Precision Glass Crystal Units,
by Roger E. Bennett. 30 Nov 62, 21p.
(Contract DA 36-039-sc-90698, Proj. 3A99-15-004)
Unclassified report

DESCRIPTORS: *Quartz, *Crystal holders, *Quartz resonators, Specifications, Temperature, Resistance (Electrical), Aging (Materials), Tables, Glass, Frequency stabilizers.

AD-298 622 Div. 8, 30
(TISTE/CAM) OTS price $5.60

General Electric Co., Syracuse, N. Y.
SOLID STATE MICROELECTRONIC SYSTEMS.
Quarterly progress rept. no. 1, 20 Aug-1 Dec 62,
by R. Warr, R. Marolf, and G. Danielson.
1 Dec 62, 52p. (Rept. no. 1)
(Contract DA 04-039-AMC-00020(E); Continuation of Contract DA 36-039-sc-87466)
Unclassified report

DESCRIPTORS: *Microminiaturization (Electronics), *Computer logic, *Transmit-receivers, Digital systems, Reliability, Failure (Mechanics), Probability, Operation, Tolerances (Mechanics), Theory, Analysis, Tables, Timing circuits, Integrated circuits, Trigger circuits, Solid state physics.

AD-298 629 Div. 8
(TISTE/OHD) OTS price $1.10

Air Force Cambridge Research Labs., Bedford, Mass.
ASPECT-SENSITIVE SPREAD AND MULTIPATH DELAY ON OFF-AZIMUTH HF ARCTIC SIGNALS LARGELY ABOVE THE MUF,
by H. S. Marsh, R. A. Swirbalus, and R. J. Cormier. Oct 62, 5p.
(Proj. 5631)
(AFCRL-62-777) Unclassified report

Reprinted from Proceedings of the 6th National Conference on Military Electronics, Washington, D. C., pp. 184-192, 26 June, 1962.

DESCRIPTORS: *Propagation, *Radio transmission, Azimuth, Terrestrial magnetism, Experimental data, High frequency, Polar regions.

AD-298 645 Div. 8, 5
(TISTE/JBM) OTS price $2.60

Air Force Cambridge Research Labs., Bedford, Mass.
THE MATERIAL LIMITATIONS OF TUNNEL DIODE COMMUNICATIONS CIRCUIT PERFORMANCE,
by F. D. Shepherd, Jr., A. C. Yang, and V. Vickers. Jan 63, 21p. (Research rept. no. AFCRL-63-2)
Unclassified report

DESCRIPTORS: *Diodes (Semiconductors), *Circuits, *Semiconductors, Materials, Electric currents, Noise (Radio), Impurities, Germanium, Silicon, Electric potential, Processing, Manufacturing methods, Group IV elements, Group III elements, Group V elements, High frequency, Frequency, Integral equations, Electrical properties, Communications equipment.

AD-298 675 Div. 8
(TISTE/OHD) OTS price $10.10

Hughes Aircraft Co., Newport Beach, Calif.
(No title).
Final rept. and Interim engineering rept. no. 3, 1 Oct 61-28 Feb 62 on High Frequency Transistor Study,
by Hans G. Dill and R. Zuleeg. 16 Mar 62, 67p. illus. tables.
(Contract NObsr-85296)
Unclassified report

DESCRIPTORS: *Transistors, Electronic mixers, Germanium, Manufacturing methods, Metal films, Aluminum, Gold, Impurities, Design, Coaxial cables, Packaged circuits, Capacitance, Mathematical analysis, Electrical properties, Inductance, Electrical impedance, L band.

Division 8 - ELECTRONICS AND ELECTRONIC EQUIPMENT

AD-298 676 Div. 8, 26
(TISTE/JBM) OTS price $3.60

Texas Instruments Inc., Dallas.
RESEARCH AND DEVELOPMENT OF HIGH TEMPERATURE SEMICONDUCTOR DEVICES.
Interim engineering rept. no. 12, 1 Jan-31 Mar 62.
31 Mar 62, 1v.
(Contract NObsr-85424)
Unclassified report

DESCRIPTORS: *Semiconductor devices, *Transistors, Zinc, Diffusion, Arsenides, Gallium compounds, Magnesium, Silicon compounds, Difference equations, Statistical distributions, Dioxides, Mercury, Surface properties, Encapsulation, Semiconductor films, Electric current, Temperature, Vapor plating, Processing, Manufacturing methods, High-temperature research.

AD-298 677 Div. 8, 26
(TISTE/JBM) OTS price $2.60

Texas Instruments, Inc., Dallas.
RESEARCH AND DEVELOPMENT OF HIGH-TEMPERATURE SEMICONDUCTOR DEVICES.
Final rept., 15 Mar 57-31 May 58,
by T. S. Burkhalter and R. L. Petritz. 31 May 58, 1v.
(Contract NObsr-72653)
Unclassified report

DESCRIPTORS: *Semiconductor devices, Crystal growth, Gallium compounds, Arsenides, Semiconductors, Materials, Purification, Diodes (Semiconductor), Diffusion, Rectifiers, Zinc, Production, Manufacturing methods, Group IV elements, Crystallization, Etched crystals, High-temperature research.

AD-298 679 Div. 8, 15
(TISTP/WH) OTS price $3.60

Remington Rand Univac Div., Sperry Rand Corp., Philadelphia, Pa.
THE BIVARIATE CHI DISTRIBUTION,
by P. R. Krishnaiah, Peter Hagis, Jr., and Leon Steinberg. Aug 61, 29p. (Technical rept. no. 3)
(Contract NObs-72660)
Unclassified report

DESCRIPTORS: *Statistical distributions, *Statistical analysis, *Transistors, Reliability (Electronics), Life expectancy.

AD-298 681 Div. 8, 26, 7
(TISTE/JBM) OTS price $3.60

Ion Physics Corp., Burlington, Mass.
P-N JUNCTION FORMATION TECHNIQUES.
Quarterly rept. no. 1, 19 Nov 62-19 Feb 63,
by William J. King, James T. Burrill, and Donald Bumiller. 19 Feb 63, 31p.
(Contract AF 33(657)10505)
Unclassified report

DESCRIPTORS: *Solar cells, *Photoelectric cells (Semiconductor), *Energy conversion, Silicon, Effectiveness, Costs, Photoelectric effect, Processing, Production, Ion bombardment, Ions, Diffusion, Life expectancy, Electron transitions, Resistance (Electrical), Ion beams, Configuration, Reliability, Radiation damage, Temperature, Electric potential, Semiconductor devices, Manufacturing methods.

AD-298 689 Div. 8, 15
(TISTP/WH) OTS price $2.60

Remington Rand Univac Div., Sperry Rand Corp., Philadelphia, Pa.
STATISTICAL TECHNIQUES IN TRANSISTOR EVALUATION.
Report on Analysis of Multi-Response Data,
by Gilbert Kaskey, P. R. Krishnaiah, and Leon Steinberg. May 61, 1v. (Technical rept. no. 2)
(Contract NObs-72660)
Unclassified report

DESCRIPTORS: *Statistical distribution, *Transistors, *Analysis of variance, *Statistical processes, *Statistical analysis, Experimental data.

AD-298 690 Div. 8, 15
(TISTP/WH) OTS price $5.60

Remington Rand Univac Div., Sperry Rand Corp., Philadelphia, Pa.
STATISTICAL TECHNIQUES IN TRANSISTOR EVALUATION.
Report on Transformations to Normality,
by Gilbert Kaskey, Bernard Kolman and others.
Jan 61, 53p. (Technical rept. no. 1)
(Contract NObs-72660)
Unclassified report

DESCRIPTORS: *Statistical distribution, *Transistors, *Analysis of variance, *Statistical processes, Experimental data.

AD-298 706 Div. 8
(TISTE/OHD) OTS price $1.60

Texas Instruments, Inc., Dallas.
RESEARCH AND DEVELOPMENT OF HIGH TEMPERATURE SEMICONDUCTOR DEVICES.
Interim engineering rept. no. 9, 1 Apr-30 June 61.
30 June 61, 14p.
(Contract NObsr-85424)
Unclassified report

DESCRIPTORS: *Transistors, Arsenides, Temperature, Zinc, Diffusion, Cadmium, Vapor plating, Gold alloys, Tin alloys, Manufacturing methods, Copper, Contamination, Gallium compounds.

AD-298 707 Div. 8
(TISTE/OHD) OTS price $2.60

Texas Instruments, Inc., Dallas.
RESEARCH AND DEVELOPMENT OF HIGH TEMPERATURE SEMICONDUCTOR DEVICES.
Interim engineering rept. no. 11, 1 Oct-31 Dec 61,
by E. C Wurst and R. L. Petritz. 31 Dec 61, 22p.
(Contract NObsr-85424)
Unclassified report

DESCRIPTORS: *Transistors, Temperature, Arsenides, Manufacturing methods, Chemical milling, Encapsulation, Diffusion, Magnesium, Silicon compounds, Oxides, Zinc, Zinc alloys, Gold alloys, Tin alloys, Tests, Gallium compounds.

AD-298 708 Div. 8
(TISTE/CAM) OTS price $3.60

Office of Research Administration, U. of Michigan, Ann Arbor.
STUDY AND INVESTIGATION OF A UHF-VHF ANTENNA.

Quarterly progress rept. no. 10, 1 July-30 Sep 62,
by A. T. Adams and R. M. Kalafus. Jan 63, 34p.
(Rept. no. 3667-10-P)
(Contract AF 33(616)7180)
Unclassified report

DESCRIPTORS: *Loop antennas, *Slot antennas, *Biconical antennas, *Dipole antennas, Very high frequency, Ultrahigh frequency, Standing-wave ratios, Attenuation, Measurement, Electrical impedance, Model tests, Theory, Experimental data, Integrals, Functions, Ferrites.

AD-298 725 Div. 8
(TISTE/OHD) OTS price $3.60

Electrical Engineering Research Lab., U. of Illinois, Urbana.
STUDY AND INVESTIGATION OF MILLIMETER AND SUB-MILLIMETER WAVE RECEIVER TECHNIQUES.
Quarterly rept. no. 3, 1 Sep-30 Nov 62.
22 Feb 63, 25p.
(Contract AF 30(602)2456, Proj. 4505)
(RADC TDR 63-22) Unclassified report

DESCRIPTORS: *Detectors, *Crystal detectors, Cathode followers, Sensitivity, Sulfates, Waveguides, Crystals, Amplifiers, Infrared detectors, Light communication systems, Resonators, Mathematical analysis, Partial differential equations, Millimeter waves, Q band.

AD-298 733 Div. 8, 26
(TISTE/CAM) OTS price $9.60

International Rectifier Corp., Los Angeles, Calif.
HIGH VOLTAGE SILICON RECTIFIER STACKS.
Quarterly progress rept. no. 6, 24 Sep-24 Dec 62,
by Werner Luft and E. J. Diebold. 24 Dec 62, 117p.
(Contract DA 36-039-sc-85977)
Unclassified report

DESCRIPTORS: *Diodes (Semiconductors), *Rectifiers, *Manufacturing methods, Design, Silicon, Electric potential, Production, Heat, Mechanical properties, Electric current, Life expectancy, Cooling, Test methods, Tables.

AD-298 741 Div. 8, 25
(TISTE/CAM) OTS price $2.60

Bliley Electric Co., Erie, Pa.
PRODUCTION ENGINEERING MEASURE: QUARTZ CRYSTAL UNITS CR-(XM-40)/U (2.5 MC HIGH PRECISION).
Quarterly progress rept. no. 6, 1 Sep-30 Nov 62,
by J. M. Wolfskill, R. T. Schlaudecker, and Robert Mouck. 30 Nov 62, 27p.
(Contract DA 36-039-sc-85958)
Unclassified report

DESCRIPTORS: *Quartz, *Manufacturing methods, *Crystal oscillators, Aging (Materials), High frequency, Frequency stabilizers, Frequency multipliers, Standards, Measurement, Temperature, Crystal ovens, Test methods, Crystals, Test sets.

AD-298 743 Div. 8
(TISTE/CAM) OTS price $5.60

Institute of Science and Tech., U. of Michigan, Ann Arbor.
ON THE USE OF COMPLEX FILTERS,
by Robert Byron Crane. Mar 63, 51p. (Rept. no. 4591-3-T)
(Contract Nonr-122439)
Unclassified report

DESCRIPTORS: *Band pass filters, *Low pass filters, *Radio signals, *Radar signals, Errors, Theory, Mathematical analysis, Linear systems, Analysis, Radar interference, Radio interference, Signal-to-noise ratios.

AD-298 774 Div. 8, 15, 30
(TISTP/WH) OTS price $2.60

Office of Research Administration U. of Michigan, Ann Arbor.
ON THE SYNTHESIS OF DUAL-RESONANT CAVITIES WITH A DIGITAL COMPUTER,
by F. M. Waltz. Dec 62, 28p. (Technical memo. no. 90; Rept. no. 4853-11-T)
(Contract DA 36-039-sc-89227, Proj. no. 3A99-06-001-01)
Unclassified report

DESCRIPTORS: *Cavity resonators, *Digital computers, Resonance, Coaxial cables, Synthesis, Simultaneous equations.

AD-298 779 Div. 8
(TISTW/RD) OTS price $22.25

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
FUNDAMENTALS OF RADAR,
by A. G. Saybel'. 15 Feb 63, 402p. (Trans. no. FTD-TT-62-1215/1+2 from Izdatel'stvo ''Sovetskoye Radio'', Moskva, pp. 1-384, 1961)
Unclassified report

DESCRIPTORS: *Radar, *Textbooks, Theory, Countermeasures, Radar signals, Radar reflections, Radar receivers, Radar pulses, Moving-target indicators, Direction finding, Ranges, Radar echo areas.

AD-298 793 Div. 8, 26, 25
(TISTW/PCR) OTS price $3.60

Valpey Crystal Corp., Holliston, Mass.
INDUSTRIAL PREPAREDNESS STUDY: QUARTZ CRYSTAL UNIT CR-(XM-37)/U.
Quarterly progress rept. no. 5, 1 July-30 Sep 62,
by Norman R. Gillin. 30 Sep 62, 34p.
(Contract DA 36-039-sc-85972)
Unclassified report

DESCRIPTORS: *Crystals, Resistance (Electrical), Capacitance, Inductance, Tests, Quartz, Manufacturing methods.

AD-298 794 Div. 8, 26
(TISTE/JBM) OTS price $1.60

Chicago Telephone Supply Corp., Elkhart, Ind.
PRODUCTION ENGINEERING MEASURE FOR SUBMINIATURE,

TRANSISTOR TYPE POTENTIOMETERS.
Quarterly progress rept. no. 6, 1 Oct-31 Dec 62,
by D. C. Kinsey and G. B. Erekson. 31 Dec 62,
17p.
(Contract DA 36-039-sc-85976)
Unclassified report

DESCRIPTORS: *Potentiometers, Production, Manufacturing methods, Tests, Temperature, Moisture, Dielectrics, Reliability (Electronics), Torque, Lubrication, Subminiature Electronic equipment.

AD-298 841 Div. 8
(TISTE/JBM) OTS price $1.10

Naval Research Lab., Washington, D. C.
FERRITE-LOADED OPEN TRANSMISSION LINE,
by M. L. Reuss, Jr. and W. H. Mendenhall, Jr.
20 Feb 63, 8p. (NRL rept. no. 5867)
Unclassified report

DESCRIPTORS: *Waveguides, *Ferrites, Waveguide switches, Radar equipment, Waveguide slots, S band, X band, Microwave frequency, Power, Magnetic fields, Time, Phase measurement, Phase shifters, Standing-wave ratios, Electric potential, Propagation.

AD-298 900 Div. 8
(TISTA/LSK) OTS price $2.60

4750th Test Squadron, Tactics and Application Engineering, Tyndall Air Force Base, Fla.
USE OF SINGLE AN/APX-25 IFF/SIF ANTENNA ON F/TF-102 AIRCRAFT PRIORITY 2L.
Final rept.
31 Jan 63, 19p.
(Proj. ADC/73AD/62-9)
Unclassified report

DESCRIPTORS: *Identification systems, *Jet fighters, Radar equipment, Jet training planes, Radio interference, Antiaircraft defense systems, Antenna radiation patterns, Radio reception, Radar antennas.

AD-298 920 Div. 8
(TISTE/JWS) OTS price $3.60

American Electronic Labs., Inc., Philadelphia, Pa.
SUPERDIRECTIVE ANTENNA STUDY TASK CONTROL TECHNIQUES FOR RECEIVERS IN HIGH RF FIELDS.
Technical note,
by H. T. Ward, C. I. Sterling, and T. W. Wiley.
1 Nov 62, 1v.
(Contract AF 30(602)2662, Proj. 6202603)
(RADC TDR 63-3) Unclassified report

DESCRIPTORS: *Radio interference, *Antenna configurations, *Radio receivers, Radio fields, Superconductors, Superconductivity, Cryogenics, Negative resistance circuits, Parametric amplifiers, Dipole antennas, Helical antennas, Parabolic antennas, Loop antennas, Radar corner reflectors, Polarization, Narrow band, Broad band, Reduction, Antenna radiation patterns.

AD-298 932 Div. 8
(TISTE/JWS) OTS price $1.60

General Precision Lab., Inc., Pleasantville, N. Y.
IMPROVED CHARACTER SELECTION AND BEAM COMPENSATION AMPLIFIER FOR THE PLAN POSITION DATA DISPLAY.
Final engineering rept.
7 Sep 62, 17p.
(Contract ARDS-462)
Unclassified report

DESCRIPTORS: *Video amplifiers, *Plan position indicators, Triodes, Pentodes, Diodes (Semiconductor), Resistors, Cathode ray tubes, Temperature sensitive elements, Feasibility studies, Electron tubes.

AD-298 933 Div. 8, 26
(TISTE/JWS) OTS price $3.60

Valpey Crystal Corp., Holliston, Mass.
INDUSTRIAL PREPAREDNESS STUDY QUARTZ CRYSTAL UNIT CR-(XM-37)/U.
Quarterly progress rept. no. 5, 1 July-30 Sep 62,
by Norman R. Gillin. 30 Sep 62, 34p.
(Contract DA 36-039-sc-85972)
Unclassified report

DESCRIPTORS: *Manufacturing methods, *Quartz resonators, Resistance (Electrical), Capacitance, Precision finishing, Interferometers, Optical properties, Quartz, Production.

AD-298 956 Div. 8, 25
(TISTP/MH) OTS price $3.60

General Telephone and Electronics Labs., Inc., Bayside, N. Y.
HOT CARRIER PHENOMENA IN SEMICONDUCTORS AT MICROWAVE FREQUENCIES.
Quarterly rept. no. 2, 15 Aug-15 Nov 62,
by Esther M. Conwell, Vernon J. Fowler, and Joseph Zucker. 15 Nov 62, 26p. (Rept. no. TR 62-303.2)
(Contract DA 36-039-sc-89174, Proj. 3A99-21-001; Continuation of Contract DA 36-039-sc-87298)
Unclassified report

DESCRIPTORS: *Semiconductors, *Phonons, Special functions, Crystal structure, Crystal lattices, Heating, Microwave frequencies, Distribution, Drag.

AD-298 969 Div. 8, 7, 22
(TISTE/JBM) OTS price $1.60

Armour Research Foundation, Chicago, Ill.
TWO-CONDUCTOR LOW-PASS TRANSMISSION LINE THEORY.
Quarterly rept. no. 6,
by Henry G. Tobin. 31 Dec 62, 14p. (Rept. no. 5167-Q6)
(Contract N178-7927, Proj. E167)
Unclassified report

DESCRIPTORS: *Explosives initiators, *Coaxial cables, *Coatings, Paints, Cements, Dielectrics, Transmission lines, Theory, Electrical conductance, Attenuation, Production, Epoxy plastics, Resistance (Electrical), Polyethylene plastics, Rubber, Ceramic coatings, Silver, Radiofrequency interference, Attenuators.

AD-298 970 Div. 8
(TISTE/CAM) OTS price $4.60

Philco Corp., Palo Alto, Calif.
COMMUNICATIONS PLAN, INDIAN OCEAN STATION.

Technical operating rept
15 Mar 63, 1v. (Rept. no. WDL-TR1955A)
(Contract AF 04(695)113)
Unclassified report

DESCRIPTORS: *Radio stations, Radio communication systems, Intercommunication systems, Voice communication systems, Teletype systems, Telephone communication systems, Transmitter-receivers, Cryptography, Multiplex, Public address systems, Facsimile communication systems, Reliability (Electronics), Maintenance, Operation, Circuits, Design, Communications equipment.

AD-298 980 Div. 8, 6
(TISTE/JBM) OTS price $2.60

Air Force Cambridge Research Labs., Bedford, Mass.
EVALUATION OF MODIFICATION TO ANTENNA OF RAWIN SET AN/GMD-2,
by Konstantins Pocs. Jan 63, 17p. (Instrumentation for Geophysics and Astrophysics rept. no. 25; Rept. no. AFCRL-63-211)
Unclassified report

DESCRIPTORS: *Radar tracking, *Radiosondes, Radio signals, Reflection, Terrain, Antenna radiation patterns, Modulation, Microwave equipment, Microwaves, Meteorological instruments, Reduction, Power, Position finding, Antenna lobes, Errors, Dipole antennas, Tracking.

AD-299 001 Div. 8
(TISTE/JBM) OTS price $2.60

Naval Ordnance Lab., Corona, Calif.
PROPERTIES OF PHOTODETECTORS.
Report for Oct 62-Jan 63 on Photodetector Series, 56th Report,
by A. B. Naugle, W. L. Eisenman, and J. D. Merriam. 1 Feb 63, 37p. (Rept. no. NOLC 578)
Unclassified report

DESCRIPTORS: *Photoelectric cells (Semiconductor), Antimony alloys, Indium alloys, Germanium, Mercury, Impurities, Bolometers, Thermistors, Tables, Resistance (Electrical), Optical properties, Electrical properties, Photoconductivity, Tests.

AD-299 010 Div. 8, 30
(TISTE/JBM) OTS price $7.60

Electron Physics Lab., U. of Michigan, Ann Arbor.
INVESTIGATION OF LARGE-SIGNAL TRAVELING-WAVE TUBES.
Quarterly progress rept. no. 1,
by G. T. Konrad, J. E. Rowe and others. Oct 62, 69p.
(Contract AF 30(602)2834, Proj. no. 5573)
(RADC-TDR-63-8) Unclassified report

DESCRIPTORS: *Traveling wave tubes, *Noise (Radio), *Electron guns, *Programming (Computers), Magnetrons, Nonlinear systems, Effectiveness, Focusing, Helixes, Broadband, Space charges, Coupling circuits, Electrical impedance, Temperature, Tests, S band, Electron beams, Standing wave ratios, Anodes (Electron tubes), Electromagnetic fields, Microwave equipment.

AD-299 013 Div. 8
(TISTP/JWS) OTS price $3.60

Stanford Research Inst., Menlo Park, Calif.
TUNNEL CATHODES FOR MICROWAVE TUBES.
Interim rept. no. 3, 1 Dec 62-28 Feb 63,
by D. V. Geppert and B. V. Dore. Mar 63, 25p.
(Contract AF 33(657)8721, Proj. 4125)
Unclassified report

DESCRIPTORS: *Cathodes (Electron tubes), *Semiconducting films, Microwave frequency, Resistance (Electrical), Gold, Cadmium compounds, Silicon, Silicon compounds, Aluminum compounds, Oxides, Sulfides, Evaporation, Electric potential, Electric currents, Valence, Gallium alloys, Dielectrics, Thickness, Optical properties, Microwave equipment, Dielectric films, Thin films.

AD-299 119 Div. 8
(TISTE/OHD) OTS price $1.10

Aerospace Information Div., Washington, D. C.
YURIY BORISOVICH KOBZAREV AND HIS WORK. BIOGRAPHY AND ANNOTATED BIBLIOGRAPHY.
6 Mar 63, 2p. (AID rept. no. S-63-30)
Unclassified report

DESCRIPTORS: *Bibliographies, Quartz resonators, Communication theory, Taylor's series, Tuned amplifiers, Transients, Oscillators.

AD-299 121 Div. 8, 25
(TISTE/OHD) OTS price $8.10

David Sarnoff Research Center, Princeton, N. J.
MOLECULAR AMPLIFIERS AND GENERATORS.
Final rept., 1 Sep 60-31 Oct 62,
by H. J. Gerritsen, H. R. Lewis, and E. S. Sabisky. 31 Oct 62, 89p. (Rept. no. 8)
(Contract DA 36-039-sc-87386, Proj. 3A-99-21-001)
Unclassified report

DESCRIPTORS: *Masers, Titanium compounds, Dioxides, Chromium, Cryogenics, Impurities, Paramagnetic resonance, Nickel, Manganese, Erbium, Calcium compounds, Fluorides, Dysprosium, Holmium, Crystal lattices, Crystal structures, Superhigh frequency.

AD-299 229 Div. 8
(TISTE/OHD) OTS price $2.60

Defense Research Lab., U. of Texas, Austin.
A SPECTRUM ANALYZER FOR THE FREQUENCY RANGE FROM 2 CPS TO 5000 CPS,
by B. R. Criswell and B. F. Weiss. Feb 63, 6p. illus. (Rept. no. DRL-A-203)
(Contract Nonr-357901)
Unclassified report

DESCRIPTORS: *Frequency analyzers, Extremely low frequency, Very low frequency, Band-pass filters, Magnetic tape, Noise, Ship noise, Transistor amplifiers, Vibrators (Electrical), Audiofrequency.

AD-299 252 Div. 8, 26
(TISTE/JBM) OTS price $1.25

Motorola Inc., Phoenix, Ariz.
DEVELOPMENT OF A LOW NOISE - LOW DISTORTION

TRANSISTOR.
Final engineering rept.,
by John E. Muschinske and Fred A. Rubi.
10 Mar 63, 44p.
(Contract NObsr-87438)
Unclassified report

DESCRIPTORS: *Transistors, Noise (Radio), Silicon, Germanium, Very high frequency, Electric potential, Electric currents, Resistance (Electrical), Packaged circuits, Test methods, Production, Distortion, Manufacturing methods.

AD-299 256 Div. 8, 6
(TISTP/JW) OTS price $2.75

Harry Diamond Labs., Washington, D. C.
ELECTRETS. PART II. A BIBLIOGRAPHY,
by Virginia Ann Johnson. 30 Sep 62, 130p.
(Rept. no. TR-1074)
Unclassified report

DESCRIPTORS: *Electrets, Dielectric properties, Polarization, Electric currents, Piezoelectric effect, Bibliographies.

AD-299 259 Div. 8, 6
(TISTP/JW) OTS price $4.60

Harry Diamond Labs., Washington, D. C.
ELECTRETS. PART I. A STATE OF THE ART SURVEY,
by Virginia Ann Johnson. 31 Aug 62, 52p.
(Rept. no. TR-1045)
(DA proj. 5B97-01-005, HDL proj. 30300)
Unclassified report

DESCRIPTORS: *Electrets, Dielectric properties, Polarization, Electric currents, Piezoelectric effect.

AD-299 265 Div. 8
(TISTE/OHD) OTS price $4.60

Cornell U. Medical Coll., New York.
AN APPROXIMATE SOLUTION OF THE RADIO FIELD STRENGTH IN THE VICINITY OF A GROVE OF TREES,
by Alfred H. LaGrone. 15 Jan 63, 35p. 6 refs.
(Rept. no. 6-51)
(Contract AF 19(604)8038, Proj. 4603)
(AFCRL-63-23) Unclassified report

DESCRIPTORS: *Electromagnetic fields, *Radio fields, *Radio transmission, *Radio reception, Very high frequency, Ultrahigh frequency, Scattering, Absorption, Digital computers, Mathematical analysis, Reflection, Attenuation, Theory, Trees.

AD-299 267 Div. 8, 25
(TISTE/OHD) OTS price $3.60

David Sarnoff Research Center, Princeton, N. J.
CESIUM VAPOR CATHODE STUDY,
by A. L. Eichenbaum, F. Norman and others.
14 Dec 62, 28p. (Technical note no. 2)
(Contract AF 30(602)2767, Proj. 5573)
(RADC TDR 63-2) Unclassified report

DESCRIPTORS: *Electron guns, *Cathodes (Electron tubes), *Plasma jets, *Electron beams, *Ion beams, Cesium electron tubes, Ceramic materials, Electric insulation, Resistance (Electrical), Power, Mathematical analysis, Theory, Electron tubes, Plasma physics.

AD-299 268 Div. 8
(TISTE/OHD) OTS price $16.00

Cooley Electronics Lab., U. of Michigan, Ann Arbor.
A STUDY OF DOUBLE-SIDEBAND REACTIVE MIXERS.
Doctoral thesis,
by D. K. Adams. Dec 62, 232p. (Technical rept. no. 134; Rept. no. 4853-7-T)
(Contract DA 36-039-sc-89227, Proj. 3A99-06-001-01)
Unclassified report

DESCRIPTORS: *Mixers (Electronic), Sidebands, Frequency converters, Video amplifiers, Stability, Mathematical analysis, Matrix calculus, Communication theory.

AD-299 278 Div. 8
(TISTP/FR) OTS price $11.00

Stanford Electronics Labs., Stanford U., Calif.
THE MEASUREMENT OF FREQUENCY WITH SCANNING SPECTRUM ANALYZERS,
by W. R. Kincheloe, Jr. Oct 62, 129p. (Technical rept. no. 557-2; Rept. no. 62-098)
(Contract AF 30(602)2398)
(RADC TDR 62-534) Unclassified report

DESCRIPTORS: *Radiofrequency spectroscopy, *Spectrum analyzers, Filters (Electromagnetic wave), Radiofrequency, Measurement.

AD-299 314 Div. 8, 5, 22
(TISTE/JBM) OTS price $4.60

Weston Instruments Div., Daystrom, Inc., Newark, N. J.
LOW BAND PASS TRANSFORMER.
Technical progress rept., 1 July-31 Oct 62 on Phase I.
14 Nov 62, 1v.
(Contract N178-8080)
Unclassified report

DESCRIPTORS: *Transformers, *Electric detonators, Attenuation, Electromagnetic shielding, Shipborne, Test equipment (Electronics), Test methods, Packaged circuits, Configuration, Frequency, Power, Inductance, Radiofrequency, Radiofrequency interference.

AD-299 360 Div. 8, 31
(TISTE/JWS) OTS price $3.60

Navy Underwater Sound Lab., Fort Trumbull, New London, Conn.
ANALYSIS AND DEVELOPMENT OF THE SUBMARINE AS-1287/BRC WHIP ANTENNA,
by Arthur D. Carlson. 11 Feb 63, 38p. (USL rept. no. 548)
(Proj. no. SF006-03-06-7059)
Unclassified report

DESCRIPTORS: *Submarine antennas, *Omnidirectional antennas, Titanium, Stresses, Antenna masts, Flexible couplings, Test methods, Protective coverings, Strain gages, Vibration isolators, Vibration, Water waves, Radio communication systems, Hydrodynamics, Shipborne, Drag, High frequency.

AD-299 363 Div. 8
(TISTE/OHD) OTS price $1.60

Chatham Electronics Div., Tung-Sol Electric Inc., Livingston, N. J.
PRODUCTION ENGINEERING MEASURE FOR TYPE 7890 SUPER POWER HYDROGEN THYRATRON.
Quarterly rept. no. 3, 8 Sep-7 Dec 62, by C. L. Shackelford. 3 Oct 60, 17p.
(Contract DA 36-039-sc-85984)
Unclassified report

DESCRIPTORS: *Thyratrons, Hydrogen, Manufacturing methods, Electrodes, Anodes (Electron tube), Brazing, Power equipment.

9. FLUID MECHANICS

AD-298 159 Div. 9, 25
(TISTP/JW) OTS price $2.60

Massachusetts Inst. of Tech., Cambridge.
ON PLANE LINEAR MAGNETOHYDRODYNAMIC WAVES,
by L. Trilling. 1961, 25p. illus.
(Contract AF 49(638)207)
(AFOSR 939) Unclassified report

DESCRIPTORS: *Magnetohydrodynamics, Viscosity, Fluid flow, Electromagnetic waves.

AD-298 200 Div. 9
(TISTA/FRL) OTS price $4.60

Arnold Engineering Development Center, Arnold Air Force Station, Tenn.
APPROXIMATE EXPRESSIONS FOR BOUNDARY-LAYER THICKNESSES WITH SPECIFIC LONGITUDINAL VELOCITY GRADIENTS FOR APPLICATION TO MAGNETOHYDRODYNAMIC ACCELERATION CHANNELS,
by Lewis E. Rittenhouse. Mar 63, 41p.
(Contract AF 40(600)1000, Proj. 8952)
(AEDC TDR 63-24) Unclassified report

DESCRIPTORS: *Laminar boundary layer, *Turbulent boundary layer, *Boundary layer, Acceleration, Analysis, Velocity, Integral equations, Magnetohydrodynamics, Thickness.

AD-298 208 Div. 9, 25
(TISTP/JW) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
AN APPROXIMATE METHOD FOR CALCULATING AXISYMMETRICAL SUPERSONIC ISENTROPIC GAS FLOWS WITH LITTLE DIVERGENCE OF THE FLOW,
by V. G. Dulov. 23 Jan 63, 11p. (Trans. no. FTD-TT-62-1802/1+2+4 from Izvestiya Vysshikh Uchebnikh Zavedeniy, Seriya ''Aviatsionnaya Tekhnika,'' No. 2, pp. 8-14, 1962)
Unclassified report

DESCRIPTORS: *Gas flow, Boundary layer, Linear systems, Distribution, Fluid flow, Supersonic flow.

AD-298 252 Div. 9
(TISTA/GEC) OTS price $3.60

Iowa Inst. of Hydraulic Research, Iowa City.
FORCE ON A PROLATE SPHEROID IN AN AXISYMMETRIC POTENTIAL FLOW,
by L. Landweber and Matilde Macagno. Feb 63, 27p. illus.
(Contract Nonr-161101)
Unclassified report

DESCRIPTORS: *Ellipsoids, Pressure, Axially symmetric flow, Load distribution, Aerodynamic loading, Mathematical analysis, Aerodynamic characteristics.

AD-298 278 Div. 9
(TISTA/GEC) OTS price $4.60

Arnold Engineering Development Center, Arnold Air Force Station, Tenn.
VISCOUS EFFECTS ON ZERO-LIFT DRAG OF SLENDER BLUNT CONES,
by Jack D. Whitfield and B. J. Griffith. Mar 63, 36p. (Technical rept. no. AEDC-TDR-63-35)
(Contract AF 40(600)1000)
Unclassified report

DESCRIPTORS: *Conical bodies, *Blunt bodies, *Nose cones, Aerodynamic characteristics, Model tests, Wind tunnel models, Hypersonic characteristics, Drag.

AD-298 287 Div. 9
(TISTW/JEA) OTS price $1.10

Iowa Inst. of Hydraulic Research, Iowa City.
LAGALLY'S THEOREM FOR MULTIPOLES,
by L. Landweber. Feb 63, 9p.
(Contract Nonr-161101)
Unclassified report

DESCRIPTORS: *Spheres, *Special functions (Mathematical), Fluid flow, Partial differential equations, Integral equations, Motion, Moments, Integrals, Velocity, Vortices, Theory, Fluid dynamic properties.

AD-298 302 Div. 9
(TISTA/LSK) OTS price $2.60

Army Missile Command, Redstone Arsenal, Huntsville, Ala.
EQUATIONS AND FORTRAN PROGRAM FOR VISCOUS COMPONENTS OF THE TOTAL NORMAL-FORCE AND PITCHING-MOMENT COEFFICIENTS FOR A BODY OF REVOLUTION,
by Alma S. Marks. 30 Nov 62, 22p. (Rept. no. RF-TR-62-12)
(DA Proj. 1-A-2-22901-A-202)
Unclassified report

DESCRIPTORS: *Bodies of revolution, Drag, Pitch (Motion), Moments, Aerodynamic loading, Equations, Mathematical analysis, Digital computers, Guided missiles, Flight simulators, Theory, Programming (Computers), Load distribution.

AD-298 320 Div. 9
(TISTA/GEC) OTS price $3.60

Arnold Engineering Development Center, Arnold Air Force Station, Tenn.
VIBRATIONAL NONEQUILIBRIUM WITH NITROGEN IN LOW-DENSITY FLOW,
by Alexander D. Lewis and George D. Arney, Jr. Mar 63, 24p. incl. illus. 13 refs. (Rept. no. AEDC TDR 63-31)
(Contract AF 40(600)1000, Proj. 8953)
Unclassified report

Division 9 - FLUID MECHANICS

DESCRIPTORS: *Nitrogen, *Hypersonic nozzles, Superaerodynamics, Vibration, Molecular properties, Enthalpy, Wind tunnel nozzles, Thermodynamics, Hypersonic flow, Gas flow.

An analysis is made of the approximate effect of lagging vibrational adjustment on the flow properties in low-density, nitrogen flow through hypersonic nozzles. Results show that for equipment and conditions typical of low-density, high-enthalpy wind tunnels, significant amounts of the total energy of the gas may be frozen in the vibrational mode downstream of the nozzle throat. Therefore, this portion of the total energy is not available to participate in the flow process. In one case, with a total temperature of 3000 K, the vibrational energy essentially frozen downstream of the nozzle throat is approximately 10% of the test section total enthalpy, whereas the vibrational energy component at the test section would amount to only 0.05% if equilibrium were maintained. A shock process caused by placing a blunt body in the test section was found to cause the release of a negligible portion of the vibrational energy. This result is attributed to the long relaxation length compared to stand-off distance. (Author)

AD-298 565 Div. 9, 25
(TISTP/JW) OTS price $7.60

Chalmers U. of Tech. (Sweden).
DYNAMIC NON-LINEAR WAVE PROPAGATION IN IONIZED MEDIA. 5. REFLECTION OF ELECTROMAGNETIC WAVES FROM AN IONIZED STREAM IN THE PRESENCE OF A HIGH POWER PRIMARY WAVE,
by K. H. B. Wilhelmsson. 1962, 62p. (Research rept. no. 31; Rept. no. US 30)
(Contract AF 61(052)451)
(AFCRL 62-969) Unclassified report

DESCRIPTORS: *Electromagnetic waves, *Plasma physics, Ionization, Nonlinear systems, Reflection, Dynamics, Propagation.

AD-298 566 Div. 9, 25
(TISTP/JW) OTS price $3.60

California Inst. of Tech., Pasadena.
BUBBLE DYNAMICS,
by Milton S. Plesset. Feb 63, 29p. (Rept. no. 85-23)
(Contract Nonr-22028)
Unclassified report

DESCRIPTORS: *Bubbles, Fluid dynamic properties, Fluid flow, Heat transfer, Oscillation, Pressure, Dynamics.

AD-298 582 Div. 9, 1
(TISTA/LSK) OTS price $1.60

David Taylor Model Basin, Washington, D. C.
EXPERIMENTAL INVESTIGATION OF THE EFFECTS OF STABILIZING NOZZLE WIDTH ON THE HOVERING STABILITY AND PERFORMANCE OF A CIRCULAR GEM MODEL,
by Martin D. Fink. Feb 63, 16p. (Rept. no. 1711; AERO rept. no. 1047)
Unclassified report

DESCRIPTORS: *Ground effect machines, *Annular nozzles, Stability, Nozzles, Jets, Model tests, Aerodynamic characteristics, Pitch (Motion), Hovering, Configuration.

AD-298 599 Div. 9, 25
(TISTP/JW) OTS price $2.60

California U., Berkeley.
WAVE OPERATORS AND UNITARY EQUIVALENCE,
by Tosio Kato. Jan 63, 21p. (Technical rept. no. 11)
(Contract Nonr-22262)
Unclassified report

DESCRIPTORS: *Wave transmission, *Scattering, Operators (Mathematics), Fluid mechanics, Theory.

AD-298 601 Div. 9
(TISTP/JW) OTS price $3.60

Electronic Systems Div., Air Force Systems Command, Bedford, Mass.
EFFECT OF INITIAL HYDROSTATIC STRESS ON THE PROPAGATION OF SURFACE WAVES IN A LAYERED MEDIUM,
by G. H. Handleman and F. F. Ling. Nov 62, 33p. (Rept. no. ESD-TDR-63-211; SR-73)
(Contract AF 33(600)39852, Proj. no. 607)
Unclassified report

DESCRIPTORS: *Fluid flow, *Hydrostatics, Elasticity, Stresses, Wave analyzers, Surface properties, Propagation, Velocity, Liquids.

AD-298 612 Div. 9
(TISTA/LSK) OTS price $6.60

General Dynamics/Convair, San Diego, Calif.
RESEARCH ON COAXIAL JET MIXING,
by Riley E. Cruse and Remo Tontini. Nov 62, 64p. (Technical rept. no. GD/C 62-354A)
(Contract Nonr-285400)
Unclassified report

DESCRIPTORS: *Jet mixing flow, Jets, Configuration, Diffusion, Velocity, Pressure, Turbulence.

AD-298 668 Div. 9
(TISTA/LSK) OTS price $1.60

Aeronautical Research Inst., Sweden.
THE FLOW FIELD ABOUT A HEMISPHERE-CYLINDER BODY AT A MACH NUMBER OF 7.3,
by Peter G. Wilby. Nov 62, 14p. (Technical note no. 7; FFA rept. no. 92)
(Contract AF 61(052)75)
Unclassified report

DESCRIPTORS: *Blunt bodies, *Nose cones, Hemispherical shells, Bodies of revolution, Shock waves, Cylindrical bodies, Hypersonic flow.

AD-298 671 Div. 9
(TISTA/LSK) OTS price $12.50

North American Aviation, Inc., Columbus, Ohio.
THERMAL EFFECTS OF SHOCKWAVE TURBULENT BOUNDARY LAYER INTERACTION AT MACH NUMBERS 3 AND 5,
by V. Levin and T. J. Fabish. 12 Nov 62, 1v. (Rept. no. NA 62H-795)
(Contract NOw-61-0679-c)
Unclassified report

DESCRIPTORS: *Flat plate models, Pressure, Shock waves, Turbulent boundary layer, Air ejectors, Supersonic characteristics, Heat transfer, Load distribution.

AD-298 727 Div. 9, 25, 30, 10, 4
(TISTM/ODN) OTS price $4.60

Applied Physics Lab., Johns Hopkins U., Silver Spring, Md.
HYDROGEN-AIR CHEMICAL KINETIC CALCULATIONS IN SUPERSONIC FLOW,
by A. A. Westenberg. Dec 62, 39p. (Rept. no. CM-1028)
(Contract NOw 62-0604-c)
Unclassified report

DESCRIPTORS: *Hydrogen, *Air, *Supersonic flow, Supersonic nozzles, Combustion, Gases, Ignition, Combustion chambers, Atoms, Oxygen, Water, Chemical equilibrium, Equations, High temperature research, Heat, Experimental data, Programming (Computers), Reaction kinetics.

AD-298 902 Div. 9
(TISTA/LSK) OTS price $11.00

Grumman Aircraft Engineering Corp., Bethpage, N. Y.
FAVORABLE WING-BODY INTERFERENCE FOR AIRCRAFT AT SUPERSONIC SPEED: AN ANALYTIC STUDY OF DESIGN PARAMETERS,
by R. C. Meyer. 8 Aug 62, 1v.
(Contract NOa(s) 60-6125-c)
Unclassified report

DESCRIPTORS: *Wing-body configuration, Aspect ratio, Drag, Mathematical analysis, Tables, Equations, Mathematical prediction, Aerodynamic characteristics, Supersonic characteristics, Interference.

AD-298 986 Div. 9, 8, 25
(TISTP/JW) OTS price $5.60

Lockheed Aircraft Corp., Sunnyvale, Calif.
TOWARD A SIMPLE MATHEMATICAL MODEL FOR MICROWAVE BACKSCATTER FROM THE SEA SURFACE AT NEAR-VERTICAL INCIDENCE,
by J. K. Parks. Jan 63, 1v. (Technical rept. no. 6-90-62-65)
Unclassified report

DESCRIPTORS: *Microwaves, *Oceans, Functions, Antennas, Analysis, Density, Scattering, Surfaces.

AD-299 218 Div. 9, 15
(TISTP/TL) OTS price $7.60

Aerophysics Lab., Mass. Inst. of Tech., Cambridge.
AN ANALYTICAL INVESTIGATION OF CAVITY OSCILLATIONS. CAVITIES WITH UNOBSTRUCTED OPENINGS AND DISCONTINUOUS VELOCITY PROFILE,
by Eugene E. Covert. Oct 62, 68p. (Technical rept. no. 38; Rept. no. MITR DSR 8951)
(Contract Nonr-184179)
Unclassified report

DESCRIPTORS: *Hydrodynamics, *Fluid flow, Oscillation, Perturbation theory, Differential equations, Fourier analysis, Series, Potential theory, Green's function, Complex variables, Stability, Theory.

AD-299 221 Div. 9, 15
(TISTP/TL) OTS price $2.60

Mathematics Research Center U. of Wisconsin, Madison.
SOME SIMILARITY SOLUTIONS OF PARTIAL DIFFERENTIAL EQUATIONS OF BOUNDARY LAYER,
by R. Manohar. Jan 63, 24p. (MRC technical summary rept. no. 375)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Transformation (Mathematics), *Partial differential equations, *Boundary layer, *Laminar boundary layer, *Turbulent boundary layer, Fluid flow, Simultaneous equations, Axially symmetric flow, Equations.

AD-299 261 Div. 9
(TISTA/GEC) OTS price $3.60

Princeton U., N. J.
THE FLOW OVER A CYLINDER WITH VARIOUS NOSE SHAPES AT ZERO ANGLE OF ATTACK AT HYPERSONIC SPEEDS. Interim rept. on Aerothermodynamic Investigations in High Speed Flow,
by C. C. Horstman. Jan 63, 30p.
(Contract AF 33(616)7629, Proj. 7064)
(ARL 63-14) Unclassified report

DESCRIPTORS: *Conical bodies, *Hemispherical shells, *Cylindrical bodies, Load distribution, Aerodynamic loading, Heat transfer, Drag, Shock waves, Aerodynamic characteristics, Nose cones, Hypersonic characteristics.

AD-299 283 Div. 9
(TISTA/GEC) OTS price $9.10

Midwest Research Inst., Kansas City, Mo.
SUPERSONIC FLUTTER OF AIRFRAMES WITH FLEXIBLE BODIES.
Final rept., 25 Oct 61-24 Nov 62,
by John E. Yates. 31 Dec 62, 93p.
(Contract NOw 62-0099-d, Proj. 2557-P)
Unclassified report

DESCRIPTORS: *Airframes, Wing-body configurations, Equations, Motion, Aerodynamic characteristics, Elasticity, Delta wings, Theory, Aeroelasticity, Elastic shells, Supersonic characteristics, Flutter.

AD-299 290 Div. 9
(TISTA/GEC) OTS price $1.60

Arnold Engineering Development Center, Arnold Air Force Station, Tenn.
A COMPARISON OF TRANSITION REYNOLDS NUMBERS FROM 12-IN. AND 40-IN. SUPERSONIC TUNNELS,
by C. J. Schueler. Mar 63, 18p. (Rept. no. AEDC-TDR-63-57)
(Contract AF 40(600)1000, Proj. 8952)
Unclassified report

DESCRIPTORS: *Cylindrical bodies, Supersonic characteristics, Wind tunnel models, Model tests, Boundary layer transitions, Nose cones, Blunt bodies, Structural shells, Reynolds number.

AD-299 356 Div. 9
(TISTP/TL) OTS price $4.60

Naval Weapons Lab., Dahlgren, Va.
STAGNATION AND WAKE FLOWS NORMAL TO A FLAT

Division 10 - FUELS AND COMBUSTION
Division 11 - GROUND TRANSPORTATION EQUIPMENT

SURFACE,
by Ernst W. Schwiderski and Hans J. Lugt.
Feb 63, 1v. (NWL rept. no. 1840)
Unclassified report

DESCRIPTORS: *Boundary layer, *Surfaces, *Fluid dynamic properties, *Wakes, Motion, Velocity, Numerical analysis, Differential equations, Reynolds number, Stagnation point, Theory, Fluid flow.

10. FUELS AND COMBUSTION

AD-298 217 Div. 10, 4, 25
(TISTM/ODN) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
FLAME PROPAGATION ALONG THE CONTACT SURFACE OF METALS WITH SOLID OXIDIZING AGENTS,
by D. P. Polikarpov and N. N. Bakhman.
14 Jan 62, 12p. (Trans. no. FTD-TT-62-1570/1+2+4 from Inzhenerno-Fizicheskiy Zhurnal, Vol. 5, No. 7, pp. 11-17, 1962)
Unclassified report

DESCRIPTORS: *Metals, *Flame propagation, *Powder metals, Oxidizers, Solids, Inorganic compounds, Pressure, Velocity, Combustion, Aluminum, Tungsten, Potassium compounds, Barium compounds, Silver compounds, Zinc compounds, Lead compounds, Manganese compounds, Copper compounds, Cobalt compounds, Iron compounds, Tin compounds, Chromium compounds, Oxides, Chlorates, Permanganates, Nitrates, Surfaces, Fuels.

AD-298 591 Div. 10
(TISTM/EJH) OTS price $1.10

Aerospace Information Div., Washington, D. C.
FACTORS AFFECTING THE THERMAL STABILITY OF JET FUELS,
by I. N. Danilov and Kh. A. Murzabulatov.
21 Feb 63, 4p. (AID rept. P-63-27; Series rept. no. 17; Trans. from Bashkirskiy nauchno-issledovatel'skiy institut po pererabotke nefti. Sernistyye nefti i produkty ikh pererabotki, Moskva, Gostoptekhizdat, Trudy, no. 5, pp. 238-250, 1962)
Unclassified report

DESCRIPTORS: *Jet engine fuels, High temperature research, Test methods, Heating, Pressure, Test equipment, Controlled atmospheres, Thermal stresses, Stability.

AD-298 605 Div. 10
(TISTM/ODN) OTS price $2.60

Ammunition Group Picatinny Arsenal, Dover, N. J.
EFFECTS OF SOLVENT CONTAMINATION ON BALLISTIC PERFORMANCE OF M5 FLAKE PROPELLANT IN SMALL EJECTION TYPE ITEMS,
by Stanley Wachtell and Kenneth Russell.
Apr 62, 1v. (Technical memo. no. ORDBB-DP: 3-4-62)
Unclassified report

DESCRIPTORS: *Propellants, *Organic compounds, Organic solvents, Solvent action, Solvent extraction, Ballistics, Vapors, Graphite, Water vapor, Contamination, Organic compounds, others.

AD-298 838 Div. 10
(TISTM/AM) OTS price $1.60

Stanford Research Inst., Menlo Park, Calif.
THE ROLE OF ALUMINUM AND ITS OXIDES IN SOLID PROPELLANTS.
Quarterly rept. no. 2, 1 Oct-31 Dec 62,
by G. Neil Spokes. Jan 63, 9p.
(Contract AF 04(694)128, Proj. no. PAU-4134)
(SSD-TDR-63-41) Unclassified report

DESCRIPTORS: *Thermionic emission, *Aluminum compounds, *Exhaust gases, Aluminum, Theory, Analysis, Ionization, Measurement, Impurities, Radiometers, High-temperature research, Solid rocket propellants, Oxides, Particles

AD-299 245 Div. 10, 27
(TISTA/GEC) OTS price $3.60

Reaction Motors Div., Thiokol Chemical Corp., Denville, N. J.
ROCKET EXHAUST SAMPLING SYSTEM FOR TWO-PHASE EXHAUST FLOW SYSTEMS.
Final rept.,
by J. I. Schaeffer. 28 Sep 61, 30p. (Rept. no. RMD 2103-F)
(Contract AF 04(611)6351, Proj. 3850)
Unclassified report

DESCRIPTORS: *Exhaust gases, *Rocket motors (Liquid propellant), Chemical analysis, Design, Tests, Combustion, Model tests, Pentaboranes, Gas flow, Sampling, Rocket motor nozzles, Test equipment.

11. GROUND TRANSPORTATION EQUIPMENT

AD-298 282 Div. 11, 7
(TISTE/JBM) OTS price $3.60

RAND Corp., Santa Monica, Calif.
BATTERY-OPERATED ELECTRIC AUTOMOBILES,
by George A. Hoffman. Mar 63, 31p. (Rept. no. P-2712)
Unclassified report

DESCRIPTORS: *Passenger vehicles, *Electric propulsion, Batteries and components, Storage batteries, Costs, Electric motors.

AD-298 644 Div. 11, 13, 1
(TISTA/LSK) OTS price $2.60

Naval Research Lab., Washington, D. C.
THE DEVELOPMENT OF A COMBINATION RUNWAY FOAMING-TANKER VEHICLE FOR AUGMENTING NAVAL AIR STATION FIRE-FIGHTING OPERATIONS,
by H. B. Peterson, R. L. Gipe, and R. L. Tuve.
31 Jan 63, 22p. (NRL rept. no. 5887)
Unclassified report

DESCRIPTORS: *Firefighting vehicles, Crash vehicles, Aircraft fires, Design, Foams.

12. GUIDED MISSILES

AD-298 183 Div. 12, 30
(TISTA/GEC) OTS price $1.10

System Development Corp., Santa Monica, Calif.
INFORMATION FOR COP USERS: STANDARD UTILITY ROUTINES,
by J. A. Kneemeyer. 27 Feb 63, 3p. (Technical memo. no. TM-892/003/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Satellite networks, Programming (Computers).

AD-298 211 Div. 12, 18
(TISTA/GEC) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
A ROCKET CARRIER GOES TO THE FIRING RANGE,
by V. Belikov. 1 Feb 63, 6p. (Trans. no. FTD-TT-63-97 from Russian Newspaper, Izvestiya, no. 239 (14093), 6p., 7 Oct 62)
Unclassified report

DESCRIPTORS: *Guided missiles (Air-to-air), Military training, Interception, Aerial targets, Target acquisition.

AD-298 712 Div. 12
(TISTA/GEC) OTS price $1.60

System Development Corp., Santa Monica, Calif.
NEARLY CIRCULAR PERIODIC ORBITS ABOUT AN OBLATE PLANET,
by Richard B. Barrar. 28 Feb 63, 11p. (Rept. no. SP-1067/002/00)
Unclassified report

DESCRIPTORS: *Satellites (Artificial), Motion, Polar orbit trajectories, Mathematical analysis, Orbital trajectories, Circular orbit trajectories.

AD-298 752 Div. 12
(TISTA/GEC) OTS price $9.10

Aerospace Corp., Los Angeles, Calif.
FLIGHT TEST DIRECTIVE, PART A, NO. 10-441-003 RE-ENTRY SYSTEMS PROGRAM - STV - WSMR.
1 Mar 63, 104p. (Rept. no. TOR-169(S3153)-5, suppl. 1)
(Contract AF 04(695)169)
Unclassified report

DESCRIPTORS: *Reentry vehicles, Simulation, Programming (Computers), Staging, Launching, Sounding rockets, Data, Hypersonic test vehicles, Nose cones, Guided missile trajectories.

AD-298 754 Div. 12
(TISTA/GEC) OTS price $13.50

General Electric Co., Philadelphia, Pa.
CONFIGURATION STRUCTURE AND SUBSYSTEM ENGINEERING ANALYSIS REPORT. SECTION 1. VEHICLE THERMAL ANALYSIS.
Report on Communication Satellite,
by J. D. Selby. 12 Oct 62, 1v. (Rept. no. 62SD4300, vol. 1)
(Contract AF 04(647)476, Proj. ADVENT)
Unclassified report

DESCRIPTORS: *Communication satellites (Active), Thermal insulation, Solar panels, Satellite antennas, Infrared detectors, Extendable structures, Solar cells, Tests, Ground support equipment, Air conditioning equipment, Temperature control.

AD-298 755 Div. 12
(TISTE/OHD) OTS price $14.00

General Electric Co., Philadelphia, Pa.
COMMUNICATION SATELLITE PROJECT ADVENT. THERMAL CONTROL SUBSYSTEM ENGINEERING ANALYSIS,
by J. D. Selby. 12 Oct 62, 202p. (Rept. no. 62SD4300, vol. VII)
(Contract AF 04(647)476)
Unclassified report

DESCRIPTORS: *Temperature control, *Control systems, Thermal insulation, Thermal conductivity, Thermal radiation, Heat transfer, Temperature, Cooling, Heating, Space environmental conditions, Panels (Structural), Design, Communication satellites (Active).

AD-298 756 Div. 12
(TISTA/GEC) OTS price $6.60

General Electric Co., Philadelphia, Pa.
CONFIGURATION STRUCTURE AND SUBSYSTEM ENGINEERING ANALYSIS REPORT. SECTION 5. PNEUMATIC SUBSYSTEM ENGINEERING ANALYSIS.
Report on Communication Satellite,
by J. D. Selby. 12 Oct 62, 1v. (Rept. no. 62SD4300, vol. 9)
(Contract AF 04(647)476, Proj. ADVENT)
Unclassified report

DESCRIPTORS: *Communication satellites (Active), Design, Control jets, Torque, Pitch (Motion), Yaw, Roll, Thrust, Valves, Misalignment, Storage tanks, Pneumatic systems, Attitude control systems.

AD-298 757 Div. 12
(TISTA/GEC) OTS price $11.50

General Electric Co., Philadelphia, Pa.
CONFIGURATION STRUCTURE AND SUBSYSTEM ENGINEERING ANALYSIS REPORT. SECTION 5. PNEUMATIC SUBSYSTEM ENGINEERING ANALYSIS.
Report on Communication Satellite,
by J. D. Selby. 12 Oct 62, 1v. (Rept. no. 62SD4300, vol. 10)
(Contract AF 04(647)476, Proj. ADVENT)
Unclassified report

DESCRIPTORS: *Communication satellites (Active), *Control jets, Experimental data, Nitrogen, Exhaust nozzles, Tests, Attitude control systems, Nozzles, Gas flow, Pneumatic systems, Thrust.

AD-298 761 Div. 12
(TISTA/GEC) OTS price $8.10

General Electric Co., Philadelphia, Pa.
CONFIGURATION STRUCTURE AND SUBSYSTEM ENGINEERING

ANALYSIS REPORT. SECTION 9. AGE ENGINEERING ANALYSIS.
Report on Communication Satellite,
by J. D. Selby. 12 Oct 62, 1v. (Rept. no. 62SD4300, vol. 18)
(Contract AF 04(647)476, Proj. ADVENT)
Unclassified report

DESCRIPTORS: *Communication satellites (Active), Checkout equipment, Air conditioning equipment, Circuits, Instrumentation, Design, Ground support equipment.

AD-298 762 Div. 12
(TISTA/GEC) OTS price $4.60

General Electric Co., Philadelphia, Pa.
CONFIGURATION STRUCTURE AND SUBSYSTEM ENGINEERING ANALYSIS REPORT. SECTION 9. AGE ENGINEERING ANALYSIS.
Report on Communication Satellite,
by J. D. Selby. 12 Oct 62, 1v. (Rept. no. 62SD4300, vol. 19)
(Contract AF 04(647)476, Proj. ADVENT)
Unclassified report

DESCRIPTORS: *Communication satellites (Active), Checkout equipment, Instrumentation, Circuits, Design, Ground support equipment.

AD-299 358 Div. 12, 30
(TISTP/TL) OTS price $6.60

System Development Corp., Santa Monica, Calif.
MULTICON REVISION MILESTONE 6 VALIDATION SPECIFICATIONS,
by E. Armstrong. 19 Feb 63, 64p. (Technical memo. no. TM(L)-1040/000/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Satellite networks, *Satellites (Artificial), Data processing systems, Errors, Programming (Computers), Orbital trajectories.

AD-299 365 Div. 12
(TISTA/LSK) OTS price $9.60

Douglas Aircraft Co., Inc., Santa Monica, Calif.
MODEL GAM-87A. DESIGN EVALUATION TEST PROGRAM FOR SAFETY AND ARMING MECHANISMS, DOUGLAS DESIGNED,
by S. R. Hands and D. C. Henderson. 1 Mar 63, 1v. (Rept. no. SM-42323)
(Contract AF 33(600)39587)
Unclassified report

DESCRIPTORS: *Guided missiles (Air-to-surface), *Arming devices, *Destructors, Vibration, Thermal stresses, Acceleration, Water, Impact shock, High altitude, Tests.

AD-299 393 Div. 12
(TISTW/RD) OTS price $2.60

Rubber Lab., Mare Island Naval Shipyard, Vallejo, Calif.
SURVEILLANCE TESTS OF MARK 15 POLARIS INTERTUBE SEALS.
Progress rept. no. 1,
by O. J. Justl and A. E. Barrett. 22 Mar 63, 1v. (Rept. no. 127-22)
Unclassified report

DESCRIPTORS: *Guided missiles (Underwater-to-surface), *Guided missile launchers, *Rubber seals, Underwater-to-air, Pipes, Deformation, Sea water, Failure (Mechanics), Pressure, Penetration, Seals, Degradation.

AD-299 398 Div. 12
(TISTA/LSK) OTS price $2.60

Boeing Co., Seattle, Wash.
WEIGHT AND BALANCE STATUS REPORT - WING VI,
by P. F. Labes. 8 Mar 63, 25p. (Rept. no. D2-30147-1)
(Contract AF 04(694)266)
Unclassified report

DESCRIPTORS: *Guided missiles (Surface-to-surface), Airframes, Joints, Structures, Rocket motors (Solid propellant), Weight.

13. INSTALLATIONS AND CONSTRUCTION

AD-298 250 Div. 13, 22
(TISTW/RD) OTS price $4.60

Army Engineer Research and Development Labs., Fort Belvoir, Va.
CREVASSE DETECTOR FOR OPERATION IN SNOW AND ICE.
Report for Mar 53-Aug 62,
by Robert E. Thonen. 29 Nov 62, 39p. (Technical rept. no. 1732)
(DA proj. 8-07-04-203)
Unclassified report

DESCRIPTORS: *Terrain, *Detectors, *Mine detectors, Audiofrequency, Electrodes, Polar regions, Glaciers, Snow, Ice, Orifices.

AD-298 283 Div. 13, 3, 2
(TISTW/JEA) OTS price $3.60

Geophysics Corp. of America, Bedford, Mass.
COMPARISON OF SULFUR-DIOXIDE DIFFUSION TRIALS AT DUGWAY, UTAH AND O'NEILL, NEBRASKA.
Scientific rept. no. 1,
by Frank A. Record. 19 Nov 62, 31p. (GCA technical rept. no. 62-11-G)
(Contract DA 42-007-cml-552)
Unclassified report

DESCRIPTORS: *Sulfur compounds, *Atmospheric pollution, *Gas analysis, Analysis, Wind direction indicators, Dioxides, Least squares method, Correlation techniques, Stability, Mathematical prediction, Experimental data, Diffusion, Feasibility studies.

AD-298 293 Div. 13, 22, 9
(TISTA/GEC) OTS price $8.10

Ballistic Research Labs., Aberdeen Proving Ground, Md.
DESIGN OF AIRCRAFT REVETMENTS,
by George A. Coulter and Robert L. Peterson.
Oct 62, 94p. (Memo. rept. no. 1440)
Unclassified report

DESCRIPTORS: *Airplanes, *Fortifications, Model tests, Shock tubes, Pressure, Vulnerability, Design, Gas flow, Smokes, Shelters, Blast, Shock waves.

AD-298 578 Div. 13
(TISTE/JWS) OTS price $22.25

Parsons, Ralph M., Co., Los Angeles, Calif.
A GUIDE FOR THE DESIGN OF SHOCK ISOLATION SYSTEMS

FOR UNDERGROUND PROTECTIVE STRUCTURES.
Dec 62, 1v.
(Contract AF 29(601)4551, Proj. 1080)
(AFSWC TDR 62-64) Unclassified report

DESCRIPTORS: *Underground structures, *Nuclear explosions, *Launching sites, Silos, Shock (Mechanics), Vibration, Nuclear warfare, Nuclear explosion damage, Stresses, Velocity, Air burst, Damping, Guided missile safety, Load distribution, Mathematical prediction, Shock waves, Seismic waves.

AD-298 631 Div. 13, 22
(TISTM/BRW) OTS price $4.60

Army Engineer Research and Development Labs., Fort Belvoir, Va.
DEMOLITION OF CONCRETE LOCKS ON THE OHIO RIVER (RESEARCH PHASE),
by Howard J. Vandersluis. 20 Nov 62, 34p.
(Technical rept. no. 1730-TR)
(roj. 8F07-10-002)
Unclassified report

DESCRIPTORS: *Concrete, Demolition, Explosive materials, Underwater explosions.

AD-298 719 Div. 13, 20
(TISTE/JBM) OTS price $2.50

Technical Operations, Inc., Burlington, Mass.
THE EFFECT OF LIMITED STRIPS OF CONTAMINATION ON THE DOSE RATE IN A MULTISTORY WINDOWLESS BUILDING.
Final rept.,
by John F. Batter, Albert W. Starbird, and Nancy-Ruth York. Aug 62, 98p. (Rept. no. TO-B-62-58)
(Contract OCD OS 62-14)
Unclassified report

DESCRIPTORS: *Shelters, *Nuclear explosions, *Radioactive fallout, *Radiation hazards, Contamination, Dose rate, Underground structures, Radiation effects, Urban areas, Simulation, Models (Simulation), Test equipment, Programming (Computers), Shelters, Buildings.

AD-298 721 Div. 13, 25
(TISTM/BRW) OTS price $2.50

Massachusetts Inst. of Tech., Cambridge.
THE DYNAMIC BEHAVIOR OF REINFORCED CONCRETE COLUMNS. PART III,
by Cheng Y. Yang and Kenneth F. Reinschmidt.
Oct 62, 113p. (Rept. no. R62-33)
(Contract NBy-32209, Proj. DSR 8966)
(DASA 1333) Unclassified report

DESCRIPTORS: *Reinforced concrete, *Beams (Structural), Dynamics, Theory, Tests, Mathematical analysis, Differential equations, Mechanical properties, Loading (Mechanics).

AD-298 736 Div. 13
(TISTW/RD) OTS price $7.60

Army Engineer Research and Development Labs., Fort Belvoir, Va.
TIMBER CUTTING WITH PASTE EXPLOSIVE,
by James A. Dennis. 23 Nov 62, 69p. (Technical rept. no. 1731-TR)
Unclassified report

DESCRIPTORS: *Demolition, Explosive materials, Tests, Wood, Trees.

AD-299 114 Div. 13
(TISTE/OHD) OTS price $6.60

University Coll., Galway (Eire).
IMPACT RESISTANCE OF PLAIN, REINFORCED AND PRESTRESSED CONCRETE BEAMS.
Final technical rept., 1 Aug 61-1 Aug 62,
by J. D. O'Keefe and P. J. Faherty. Sep 62, 30p. illus. tables.
(Contract DA 91-591-EUC-1823)
Unclassified report

DESCRIPTORS: *Beams (Structural), *Reinforced concrete, Test equipment, Test methods, Structures, Experimental data, Mathematical analysis, Theory, Stresses, Failure (Mechanics), Vibration, Impact shock.

14. MATERIALS (NON-METALLIC)

AD-298 155 Div. 14, 17, 25
(TISTM/RGR) OTS price $.50

Watervliet Arsenal, N. Y.
PHOTOELASTIC INVESTIGATION OF SHEAR STRESS DISTRIBUTION IN FIBER-REINFORCED MATERIALS,
by T. F. MacLaughlin. Dec 62, 15p. (Rept. no. WVT-RR-6220)
Unclassified report

DESCRIPTORS: *Photoelasticity, *Synthetic rubber, *Composite materials, Shear stresses, Reinforcing materials, Aluminum, Instrumentation, Measurement, Fibers.

AD-298 212 Div. 14
(TISTM/RGR) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
''SITALL'', A RIVAL FOR METAL,
by A. Dikhtyar'. 4 Feb 63, 2p. (Trans. no. FTD-TT-63-54; Trans. from Russian Newspaper, Komsomol'skaya Pravda, p. 2, October 14, 1962)
Unclassified report

DESCRIPTORS: *Ceramic materials, *Ball bearings.

AD-298 214 Div. 14
(TISTM/ODN) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
THE EFFECT OF COMPOSITION, HEAT, AND ELECTROLYTIC TREATMENT ON THE DIELECTRIC PROPERTIES OF STEATITE CERAMICS,
by K. A. Vodop'yanov and B. G. Karov. 25 Jan 63, 11p. (Trans. no. FTD-TT-62-1800/1+2+4 from Izvestiya Vysshikh Uchenykh Zavedeniy, Fizika, No. 3, pp. 55-61, 1962)
Unclassified report

DESCRIPTORS: *Ceramic materials, *Talc, Heat treatment, Magnesium compounds, Silicates, Electrolysis, Frequency, Low frequency, Dielectric properties.

AD-298 334 Div. 14, 15
(TISTW/PCR) OTS price $3.60

Watervliet Arsenal, N. Y.
ALPHA-CLASSIFICATION OF MICROFIBERS. PART I,

by M. A. Sadowsky and M. A. Hussain. Dec 62, 36p. incl. illus. tables (Rept. no. WVT-RR-6222)
Unclassified report

DESCRIPTORS: *Fibers (Synthetic), Mechanical properties, Hardening, Elasticity, Matrix algebra, Stresses, Equations, Mathematical analysis.

The mechanical behavior of linear microfibers is determined by the degree of stiffening and hardening germane to the microfiber state of matter. Forming linear microfibers as limits of 3-dimensional elastic fibers, it is found that four distinct types of linear microfibers may be expected to exist in the physical world as characterized by their alpha-values of 1, 2, 3, and 4. Lacking physical experimental data to distinguish between actual physical existence and potential physical existence, all four types are theoretically analyzed as to their mechanical properties. (Author)

AD-298 335 Div. 14
(TISTM/BRW) OTS price $4.00

Office of Naval Research, Washington, D. C.
SEVENTH JOINT ARMY-NAVY-AIR FORCE CONFERENCE ON ELASTOMER RESEARCH AND DEVELOPMENT OCTOBER 22-24, 1962 HELD AT U. S. NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO, CALIFORNIA. VOLUME 1.
1962, 276p. incl. illus. tables (Rept. no. ONR-13, vol. 1)
Unclassified report

DESCRIPTORS: *Elastomers, *Symposia, Thermal insulation, Rocket cases, Solid rocket propellants, Adhesion, Binders, Space environmental conditions, Polymers, Mechanical properties, Chemical bonds, Viscosity, Elasticity.

Contents: Navy's program on materials; introductory remarks; polymer research in the National Aeronautics and Space Administration; programme statement on behalf of U.K. Ministry of Aviation; for the British Admiralty; macromolecular configurations and high elasticity; special polymers for rocket case insulation; flexible, thermal insulation for solid propellant rocket motors; flexible motor case insulators; adhesion studies on liner and propellant; crystallinity in solid propellant binders; elastomeric and compliant materials for contact with liquid rocket fuels and oxidizers; self-sealants for aerospace vehicles; low-friction rubbers; antirads and prorads for Diene rubbers; the relationship between radiation induced compression set and the degree of vulcanization in natural rubber; elastomers resistant to ultraviolet vacuum; elastomers for neutron shielding; discussion on radiation problems - post conference comments; high temperature resistant elastomers.

AD-298 336 Div. 14
(TISTM/BRW) OTS price $3.50

Office of Naval Research, Washington, D. C.
SEVENTH JOINT ARMY-NAVY-AIR FORCE CONFERENCE ON ELASTOMER RESEARCH AND DEVELOPMENT OCTOBER 22-24, 1962 HELD AT U. S. NAVAL RADIOLOGICAL DEFENSE LABORATORY, SAN FRANCISCO, CALIFORNIA. VOLUME 2.
1962, 1v. incl. illus. tables, refs. (Rept. no. ONR-13, vol. 2)
Unclassified report

DESCRIPTORS: *Elastomers, *Symposia, Thermal insulation, Rocket cases, Solid rocket propellants, Adhesion, Binders, Space environmental conditions, Polymers, Mechanical properties, Chemical bonds, Viscosity, Elasticity.

Contents: Mechanism of thermal degradation of polymers; boron elastomer prospects; boron containing polymers; discussion on boron polymer research; synthesis of elastomers containing Si-N bonds in the main chain; semi-inorganic polymer synthesis; discussion on inorganic polymers; perfluoroalkyl triazine elastomers; the synthesis of fluorinated C-nitroso compounds; development of trifluoronitrosomethane/tetrafluoroethylene copolymer; discussion on fluorine polymers; discussion on new polymers of elastomer interest; molecular structure and the viscoelastic properties of elastomers; comparison of ultimate tensile properties of unfilled elastomers; discussion on mechanical properties - post conference comments; cavitation/erosion-resistant coatings; performance of compliant skins in contact with high velocity flow in water; rigidizable expandable aerospace structures; mechanism of cross-linking of new thermally stable elastomeric polymers.

AD-298 634 Div. 14, 25
(TISTM/BRW) OTS price $4.60

Shockley Transistor Corp., Mountain View, Calif.
PREPARATION OF SEMICONDUCTOR MATERIALS.
Quarterly technical rept. no. 1, 24 June-15 Dec 57,
by William Shockley. Dec 57, 30p.
(Contract NObsr-72706)
Unclassified report

DESCRIPTORS: *Semiconductors, *Silicon compounds, *Single crystals, High-temperature research, Preparation, Iron alloys, Silicon alloys, Phase studies, Carbon, Solubility, Materials, Carbides, Crystal growth.

AD-298 638 Div. 14, 25
(TISTM/BRW) OTS price $1.60

General Telephone and Electronics Labs., Inc., Bayside, N. Y.
STUDY OF THIN FILM COMPOUNDS FORMED FROM SIMULTANEOUSLY EVAPORATED CONSTITUENTS.
Quarterly rept. no. 6, 1 Sep-30 Nov 62,
by A. K. Hagenlocher and A. E. Feuersanger.
31 Dec 62, 16p. (Technical rept. no. TR62-5.6G)
(Contract DA 36-039-sc-87302, Proj. 3A99-15-001)
Unclassified report

DESCRIPTORS: *Inorganic compounds, *Dielectrics, Barium compounds, Titanates, Titanium compounds, Oxides, Evaporation, Heating, Electron beams, Films, Preparation.

AD-298 670 Div. 14, 25
(TISTM/AM) OTS price $7.60

Stanford Research Inst., Menlo Park, Calif.
GROWTH OF SILICON CARBIDE SINGLE CRYSTALS.

Final technical rept., 14 Apr 58-15 June 61,
by F. A. Halden, W. P. Meuli, and W. J. Fredericks. 15 June 61, 73p. (Rept. no. 37)
(Contract NObsr-72772)
Unclassified report

DESCRIPTORS: *Silicon compounds, *Single crystals, Silicon alloys, Hall effect, Semiconductor devices, Impurities, Impregnation, Boron, Aluminum, Iron, Copper, Nickel, Iron alloys, Electrical properties, Solubility, Emissivity, Spectroscopy, Analysis, Bibliographies, Carbides, Crystal growth.

AD-298 720 Div. 14
(TISTM/BRW) OTS price $2.75

Raytheon Co., Newton, Mass.
PYROFIBER, FREE-STANDING, PYROGRAPHITE AND PYROCARBIDE.
Final rept., 14 Nov 59-31 Jan 63.
31 Jan 63, 134p. (Rept. no. S-515)
Unclassified report

DESCRIPTORS: *Refractory materials, *Carbides, Pyrolysis, Graphite, Rocket motor nozzles, Density, X-ray diffraction analysis, Thermal expansion, Thermal conductivity, Resistance (Electrical), Hardness, Mechanical properties, Microstructure, Thermal stresses, Manufacturing methods.

AD-298 749 Div. 14
(TISTM/AM) OTS price $1.10

Smith, A. O., Corp., Milwaukee, Wis.
GLASS SURFACE CHEMISTRY FOR GLASS-FIBER-REINFORCED PLASTICS.
Progress rept. no. 12, 1-28 Feb 63.
15 Mar 63, 6p.
(Contract NOw 62-0679-c)
Unclassified report

DESCRIPTORS: *Glass textiles, Bonding, Surface tension, Data, Glass, Surfaces, Surface properties.

AD-298 791 Div. 14
(TISTM/RGR) OTS price $3.60

Douglas Aircraft Co., Inc., Santa Monica, Calif.
MODEL GAM-87A. DESIGN AND OPERATING EXPERIENCE WITH FC-75 THERMOCONDITIONING COOLANT FLUID.
14 Feb 63, 32p. (Rept. no. SM-43427)
(Contract AF 33(600)39587)
Unclassified report

DESCRIPTORS: *Coolants, *Air conditioning equipment, Design, Heat transfer, Fluids, Dielectrics, Toxicity, Stability, Flammability.

AD-298 958 Div. 14, 25
(TISTM/AM) OTS price $2.60

Arizona State U., Tempe.
RESEARCH TO INVESTIGATE ELECTRICAL AND THERMAL PROPERTIES OF OXIDE SEMICONDUCTOR MATERIALS.
Quarterly progress rept. no. 4, 18 Aug-17 Nov 62 on Oxide Semiconductor Materials and Device Research,
by F. English, B. Gossick and others. 17 Nov 62, 28p.
(Contract DA 36-039-sc-8915)
Unclassified report

DESCRIPTORS: *Titanium compounds, *Semiconductors, Transition elements, Diodes (Semiconductor), Ceramic materials, X-ray diffraction analysis, Density, Sintering, Measurement, Powders, Semiconductor devices, Electrical properties, Oxides, Materials.

AD-298 985 Div. 14
(TISTM/AM) OTS price $4.60

Georgia Inst. of Tech., Engineering Experiment Station, Atlanta.
CERAMIC SYSTEMS FOR MISSILE STRUCTURAL APPLICATIONS.
Quarterly rept. no. 1, 1 Nov 62-31 Jan 63,
by N. E. Poulos, S. R. Elkins and others.
31 Jan 63, 36p.
(Contract NOw 63-0143-d, Proj. A-651)
Unclassified report

DESCRIPTORS: *Ceramic materials, *Silicon compounds, *Radomes, Impregnation, Plastics, Plasma jets, Additives, Ablation, Casting, Processing, Guided missiles, Compressive properties, Tensile properties, Data, Chromium compounds, Cobalt compounds, Nickel compounds, Oxides, Ceramic coatings.

AD-298 989 Div. 14
(TISTM/AM) OTS price $4.60

Armour Research Foundation, Chicago, Ill.
AN INVESTIGATION OF MATERIAL PARAMETERS INFLUENCING CREEP AND FATIGUE LIFE IN FILAMENT WOUND LAMINATES.
Quarterly rept. no. 4, 26 Oct 62-26 Jan 63,
by H. R. Nelson, R. H. Cornish, and J. W. Dally.
Feb 63, 35p. (Rept. no. K251)
(Contract NObs-86461)
Unclassified report

DESCRIPTORS: *Filament wound construction, *Composite materials, Creep, Fatigue (Mechanics), Compressive properties, Life expectancy, Diffusion, Moisture, Glass textiles, Plastics, Data, Cylindrical bodies, Reinforcing materials, Laminates.

AD-299 003 Div. 14, 25
(TISTM/AM) OTS price $5.60

Air Force Cambridge Research Labs., Bedford, Mass.
DIAMOND AS A SEMICONDUCTOR MATERIAL,
by A. D. Johnson. July 62, 1v. (Rept. no. AFCRL-62-535)
(Proj. 5621)
Unclassified report

DESCRIPTORS: *Diamonds, Synthetic stones, Resistance (Electrical), Crystal lattice defects, Impurities, Carbon, Radiation measurement systems, Data, High-pressure research, High-temperature research, Fluorescence, Electroluminescence, Phosphorescence, Bibliography, Semiconductors.

Division 14 - MATERIALS (NON-METALLIC)

AD-299 082 Div. 14, 25
(TISTM/BRW) OTS price $3.60

Radio Corp. of America, Somerville, N. J.
GALLIUM ARSENIDE EPITAXIAL FILM GROWTH.
Interim technical documentary progress rept. no. 1, 15 Sep-15 Dec 62,
by N. Goldsmith, ed. by L. R. Possemato. Jan 63, 24p.
(Contract AF 33(657)9179)
(ASD TR 7-995, pt. 1) Unclassified report

DESCRIPTORS: *Single crystals, *Gallium compounds, *Semiconductors, Manufacturing methods, Vapor plating, Gallium, Chlorides, Hydrogen, Thermodynamics, Crystal growth, Arsenides, Films.

AD-299 089 Div. 14, 8
(TISTM/BRW) OTS price $3.60

New Jersey Ceramic Research Station, Rutgers U., New Brunswick.
DEVELOPMENT OF MANUFACTURING METHODS FOR THE PRODUCTION OF ALUMINA RADOMES.
Final rept.,
by Edward J. Smoke, Wilbur J. Alford and others.
30 June 60, 1v.
(Contract NOa(s) 58-872-c)
Unclassified report

DESCRIPTORS: *Radomes, *Aluminum compounds, Manufacturing methods, Molding, Ceramic materials, Oxides.

AD-299 135 Div. 14, 25
(TISTM/BRW) OTS price $1.60

Louvain U. (Belgium).
PHOTO-MAGNETO-ELECTRIC STUDY OF CdS SINGLE CRYSTALS AND ROLLED BISMUTH FOILS.
Summary rept. no. 1 and 2, Nov 58-Dec 62,
by Andre Luyckx. 5 Feb 63, 17p.
(Contract AF 61(052)166)
(RADC TDR 63-117) Unclassified report

DESCRIPTORS: *Semiconductors, *Cadmium compounds, *Bismuth, Photographic analysis, Single crystals, Crystal lattice defects, Magnetic fields, Electromagnetic fields, Polarization, Photoelectric materials, Sulfides, Foils.

AD-299 230 Div. 14, 17, 30
(TISTM/BRW) OTS price $2.25

Automation Instruments Inc., Boulder, Colo.
APPLIED RESEARCH TO ESTABLISH INFRARED DETECTION METHODS FOR NONDESTRUCTIVE ANALYSIS OF METALLIC AND CERAMIC STRUCTURES.
Final rept., Jan 61-Jan 62 on Chemical and Physical Properties of Materials,
by Dale R. Maley. Jan 63, 85p.
(Contract AF 33(616)7725, Proj. 7360)
(ASD TDR 62-385) Unclassified report

DESCRIPTORS: *Nondestructive testing, Materials, Heat transfer, Metals, Ceramic materials, Infrared detectors, Instrumentation, Infrared radiation, Test methods.

AD-299 303 Div. 14, 25
(TISTM/BRW) OTS price $2.60

Union Carbide Corp., Parma, Ohio.
ACTIVE THIN FILM CIRCUIT FUNCTIONS.
Quarterly progress rept. no. 2, 1 Sep-30 Nov 62,
by R. G. Breckenridge. 30 Nov 62, 34p. (Rept. no. 2)
(Contract DA 36-039-sc-90734, Proj. 3A99-21-001)
Unclassified report

DESCRIPTORS: *Semiconducting films, *Silicon compounds, *Single crystals, Silanes, Pyrolysis, Films, Production, Oxides, Crystal growth.

AD-299 311 Div. 14, 31
(TISTM/ODN) OTS price $1.60

Material Lab., New York Naval Shipyard, Brooklyn.
APPLICATION OF CAVITATION-EROSION RESISTANT NEOPRENE COATING ML-C570 TO STRUTS, FOILS, RUDDERS AND FLAPS OF HYDROFOIL PATROL CRAFT, PC(H)-1.
Progress rept. no. 11.
27 Mar 63, 1v.
(Proj. 4759-14)
Unclassified report

DESCRIPTORS: *Synthetic rubber, *Ship structural components, Erosion, Cavitation, Marine rudders, Flaps, Hydrofoil boats, Patrol craft, Mechanical properties, Tensile properties, Elasticity, Deformation, Surfaces, Materials, Costs, Coatings, Rubber coatings.

AD-299 312 Div. 14, 4
(TISTM/ODN) OTS price $1.60

Aeronautical Engine Lab., Naval Air Material Center, Philadelphia, Pa.
QUALIFICATION TEST OF STANDARD OIL OF CALIFORNIA GRADE 1100, PED-3293 AND PED-3296, AVIATION ENGINE OILS.
Final rept.,
by C. J. Collick. 27 Mar 63, 10p. (Rept. no. NAEC-AEL-1730)
Unclassified report

DESCRIPTORS: *Airplane engine oils, Specifications, Viscosity, Lubrication, Lubricants, Tests.

AD-299 388 Div. 14
(TISTM/AM) OTS price $2.60

Marquardt Corp., Van Nuys, Calif.
STABILITY AND EMITTANCE OF MOLYBDENUM DISILICIDE COATING UNDER VARYING TEMPERATURES AND PRESSURES,
by A. S. Rabensteine. 1 Mar 63, 19p. (Rept. no. PR 281-3Q-4)
(Contract AF 33(657)8706, Proj. 281)
Unclassified report

DESCRIPTORS: *Silicides, *Coatings, *Emissivity, Low-pressure research, High-temperature research, Corrosion inhibition, Molybdenum alloys, Titanium alloys, Evaporation, Sheets, Rods, Molybdenum, Stability.

15. MATHEMATICS

AD-298 187 Div. 15
(TISTP/JW) OTS price $3.60

Emanuel Coll. Research Language Center, Boston, Mass.
A PHILOSOPHICAL ANALYSIS OF THE SPECIAL THEORY OF RELATIVITY,
by L. Janossy, tr. by Zanis Stuberovskis,
Apr 62, 37p. (Rept. no. ETRR 62-25 from Questions on Philosophy, no. 8, pp. 101-117, 1961)
(Contract AF 19(604)8505)
Unclassified report

DESCRIPTORS: *Relativity theory, Groups (Mathematics), Analysis.

AD-298 197 Div. 15, 32
(TISTW/JEA) OTS price $1.60

RAND Corp., Santa Monica, Calif.
A GEOMETRIC INTERPRETATION OF LAGRANGE MULTIPLIERS,
by R. C. Kao. Feb 63, 12p. (Rept. no. P-2713)
Unclassified report

DESCRIPTORS: *Economics, *Numerical analysis, Geometric forms, Vector analysis, Series, Functions, Costs, Production, Processing, Theory, Partial differential equations.

AD-298 236 Div. 15, 20
(TISTW/PCR) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
ATOMIC ENERGY (SELECTED ARTICLES),
by V. K. Bogatyrev. 22 Jan 63, 12p. (Trans. no. FTD-TT-62-1639 from Russian Periodical, Atomnaya Energiya, vol. 13, no. 1, pp. 68-70, 70-72, 1962)
Unclassified report

DESCRIPTORS: *Geometric forms, *Critical assemblies, *Albedo, Integration, Analysis, Equations, Uranium compounds, Solutions, Spheres, Cylindrical bodies, Neutron flux, Mathematical analysis, Configuration, Critical assemblies.

AD-298 253 Div. 15, 2
(TISTM/AM) OTS price $4.60

Technische Hochschule, Darmstadt (Germany).
ON THE EULEREAN AND LAGRANGEAN STATISTICS OF VERY LARGE-SCALE ATMOSPHERIC MOTIONS,
by F. Wippermann, P. Gburcik, and W. Klug.
31 Aug 62, 1v. (Technical note no. 1)
(Contract AF 61(052)368)
(AFCRL 63-237) Unclassified report

DESCRIPTORS: *Atmospheric motion, *Statistical mechanics, *Statistical functions, Kinetic theory, Quantum mechanics, Mathematical analysis.

AD-298 258 Div. 15, 7, 8
(TISTP/MB) OTS price $1.60

Stanford Research Inst., Menlo Park, Calif.
ON CONVERGENCE PROOFS FOR PERCEPTRONS,
by Albert B. J. Novikoff. Jan 63, 12p.
(Contract Nonr-343800, SRI Proj. 3605)
Unclassified report

DESCRIPTORS: *Adaptive control systems, Inequalities, Convex sets.

AD-298 269 Div. 15, 30
(TISTW/JEA) OTS price $5.60

Aerospace Corp., Los Angeles, Calif.
CASCADED BINARY ERROR CODES. PART 1: PERFORMANCE CRITERIA FOR CASCADED AND OTHER ERROR CODES.
Semiannual rept., 1 July-31 Dec 62 on Research and Experimentation on Design and Implementation of Error Correcting Codes of Low Density,
by W. Altar. 25 Jan 63, 47p. (Rept. no. TDR-169(3250-42)TN-1)
(Contract AF 04(695)169)
(SSD TDR 63-5) Unclassified report

DESCRIPTORS: *Coding, *Digital systems, Statistical functions, Probability, Programming (Computers), Signal-to-noise ratio, Multiplication factor, Corrections, Digital computers, Errors.

AD-298 288 Div. 15
(TISTP/WH) OTS price $2.60

Naval Weapons Evaluation Facility, Albuquerque, N. Mex.
A METHOD FOR OBTAINING NONPARAMETRIC CONFIDENCE INTERVALS IN UP-AND-DOWN TESTING,
by Patrick L. Odell and Wallace E. Franck, Jr.
1 Mar 63, 21p. (NAVWEPS rept. no. 7988)
Unclassified report

DESCRIPTORS: *Probability, *Statistical analysis, *Experimental data, Reliability.

AD-298 297 Div. 15
(TISTP/TL) OTS price $1.60

RAND Corp., Santa Monica, Calif.
ROTATION TENSORS AND IRROTATIONAL MOTIONS IN EINSTEIN-RIEMANN SPACES,
by Dominic G. B. Edelen. Mar 63, 9p. (Memo. no. RM-3516-PR)
(Contract AF 49(638)700, Proj. RAND)
Unclassified report

DESCRIPTORS: *Algebraic topology, *Field theory, *Relativity theory, *Tensor analysis, Vector analysis, Motions, Rotation.

AD-298 306 Div. 15
(TISTW/JEA) OTS price $3.60

Research Triangle Inst., Durham, N. C.
HAZARD ANALYSIS II,
by G. S. Watson and M. R. Leadbetter. 10 Mar 63, 32p. (Technical rept. no. 10)
(Contract Nonr-342300)
Unclassified report

DESCRIPTORS: *Hazards, *Sequential analysis, Distribution, Probability, Sequences, Special functions, Theory, Density, Integrals, Integral equations, Analysis.

AD-298 561 Div. 15
(TISTP/JW) OTS price $11.00

Michigan U. Coll. of Literature, Science and the Arts, Ann Arbor.
THE BEHRENS-FISHER DISTRIBUTIONS,
by Venkutai H. Patil. Feb 63, 135p. (Technical rept. no. 04597-3-T)
(Contract Nonr-122441, Proj. NR 042-227)
Unclassified report

DESCRIPTORS: *Statistical analysis, Linear systems, Analysis of variance, Density, Distribution theory.

Division 15 - MATHEMATICS

AD-298 579 Div. 15
(TISTP/JW) OTS price $3.60

Boeing Scientific Research Labs., Seattle, Wash.
EXAMPLES AND NOTES ON MULTIPLE INTEGRATION,
by James F. Price. Feb 63, 34p. (Mathematical note no. 285; Rept. no. D1-82-0231)
Unclassified report

Also available from the author.

DESCRIPTORS: *Integrals, Functional analysis, Statistical processes.

AD-298 715 Div. 15
(TISTP/MB) OTS price $6.60

Philco Corp., Palo Alto, Calif.
CURVE FITTING BY MEANS OF ORTHOGONAL POLYNOMIALS,
by Dorothy J. Crouse. 15 Mar 63, 1v. (Rept. no. WDL-TR1998)
(Contract AF 04(695)113)
Unclassified report

DESCRIPTORS: *Curve fitting, Analysis, Experimental data, Polynomials, Statistical analysis, Tables.

AD-298 789 Div. 15
(TISTP/WH) OTS price $1.60

RAND Corp., Santa Monica, Calif.
ON ANOTHER PROPERTY OF THE FUNCTION -P1n(P),
by Dominic G. B. Edelen. Mar 63, 10p. (Memo. no. RM-2943-PR)
(Contract AF 49(638)700; Proj. RAND)
Unclassified report

DESCRIPTORS: *Groups (Mathematics), *Functions, Entropy.

AD-298 797 Div. 15
(TISTW/JEA) OTS price $1.10

Mathematics Research Center, U. of Wisconsin, Madison.
ON THE DISTRIBUTION OF INTERSECTIONS OF DIAGONALS IN REGULAR POLYGONS,
by J. Karamata. Dec 61, 7p. (MRC technical summary rept. no. 281)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Functions, *Rings, *Algebraic topology, Curve fitting, Integration, Geometry, Density, Theory, Distribution, Partial differential equations.

AD-298 798 Div. 15
(TISTP/MB) OTS price $3.60

Mathematics Research Center, U. of Wisconsin, Madison.
REARRANGEMENTS OF SQUARE MATRICES WITH NON-NEGATIVE ELEMENTS,
by Binyamin Schwarz. Dec 61, 33p. (MRC technical rept. no. 282)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Matrix algebra, Theory.

AD-298 799 Div. 15
(TISTP/MB) OTS price $1.10

Mathematics Research Center, U. of Wisconsin, Madison.
ON A PAPER BY RAY AND PITMAN,
by John Gurland. Jan 62, 10p. (MRC technical rept. no. 288)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Sampling, Statistical analysis, Statistical tests, Analysis of variance, Statistical distributions.

AD-298 800 Div. 15
(TISTW/JEA) OTS price $1.60

Mathematics Research Center, U. of Wisconsin, Madison.
LYAPUNOV FUNCTION AND A BASIC INEQUALITY IN DELAY-DIFFERENTIAL EQUATIONS,
by V. Lakshmikantham. Jan 62, 13p. (MRC technical summary rept. no. 289)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Differential equations, *Functions, Probability, Stability, Theory, Statistical functions, Functional analysis, Inequalities.

AD-298 801 Div. 15, 25
(TISTW/JEA) OTS price $3.60

Mathematics Research Center, U. of Wisconsin, Madison.
DIFFRACTION OF PULSES BY A HALF-PLANE. PART I,
by Michael Papadopoulos. Feb 62, 31p. (MRC technical summary rept. no. 293)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Electromagnetic pulses, *Wave transmission, *Diffraction analysis, Surface properties, Distribution, Acoustic properties, Geometry, Scattering, Complex variables, Transformations (Mathematics), Sources, Integral equations, Diffraction.

AD-298 803 Div. 15
(TISTW/JEA) OTS price $1.10

Mathematics Research Center, U. of Wisconsin, Madison.
HYPOTHESIS TESTING: THE USEFULNESS OF ONE MORE OBSERVATION,
by H. E. Reinhardt. Mar 62, 8p. refs. (MRC technical summary rept. no. 298)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Curve fitting, *Measure theory, Errors, Theory, Convex sets, Statistical tests, Functions, Statistical analysis, Probability.

AD-298 806 Div. 15
(TISTW/JEA) OTS price $1.60

Mathematics Research Center, U. of Wisconsin, Madison.
SOME EXTREMAL QUESTIONS FOR SIMPLICIAL COMPLEXES. I. POLYHEDRAL GEODESIC STRIPS,
by L. C. Young. Mar 62, 11p. (MRC technical summary rept. no. 304)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Algebraic topology, *Convex sets, Theory, Numerical methods and procedures, Topology, Geodesics, Inequalities.

AD-298 807 Div. 15
(TISTW/JEA) OTS price $1.60

Mathematics Research Center, U. of Wisconsin, Madison.
SOME RESULTS IN DELAY-DIFFERENTIAL EQUATIONS,
by V. Lakshmikantham. Mar 62, 20p. (MRC technical summary rept. no. 306)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Differential equations, *Functional analysis, Nonlinear systems, Theory, Matrix algebra, Sequences, Functions, Nonlinear differential equations.

AD-298 931 Div. 15
(TISTP/WH) OTS price $1.60

RAND Corp., Santa Monica, Calif.
CIRCULATION IN RELATIVISTIC CONTINUUM MECHANICS,
by Dominic G. B. Edelen. Mar 63, 9p. (Memo. no. RM-3547-PR)
(Contract AF 49(638)700, Proj. RAND)
Unclassified report

DESCRIPTORS: *Continuum mechanics, *Tensor analysis.

AD-298 991 Div. 15
(TISTP/WH) OTS price $1.75

Weibull, Waloddi, Sweden.
OUTLINE OF AN ALGEBRA OF STOCHASTIC QUANTITIES.
Summary rept., Feb 60-Aug 62 on Metallic Materials,
by Waloddi Weibull. Jan 63, 57p.
(Contract AF 61(052)522, Proj. 7351)
(ASD TDR 63-63) Unclassified report

DESCRIPTORS: *Probability, *Statistical analysis, *Algebras, Analysis of variance, Textbooks.

AD-298 999 Div. 15
(TISTP/TL) OTS price $5.60

Applied Mathematics and Statistics Labs., Stanford U., Calif.
ON ESTIMATING THE ''RATES OF CONVERGENCE'' OF ITERATIVE METHODS FOR ELLIPTIC DIFFERENCE EQUATIONS,
by Seymour V. Parter. 28 Feb 63, 58p. (Technical rept. no. 28)
(Contract Nonr-22537, Proj. NR-044-211)
Unclassified report

DESCRIPTORS: *Difference equations, Operators (Mathematics), Partial differential equations, Matrix algebra, Numerical analysis.

AD-299 016 Div. 15
(TISTP/WH) OTS price $9.10

Research Lab. of Electronics, Mass. Inst. of Tech., Cambridge.
CODING AND DECODING FOR TIME-DISCRETE AMPLITUDE-CONTINUOUS MEMORYLESS CHANNELS,
by Jacob Ziv. 31 Jan 63, 101p. (Technical rept. no. 399)
(Contracts DA 36-039-sc-78108, and DA-SIG-36-039-61-G14)
Unclassified report

DESCRIPTORS: *Communication theory, *Communication systems, Coding.

AD-299 080 Div. 15
(TISTP/MB) OTS price $1.10

Boeing Scientific Research Labs., Seattle, Wash.
CONDITIONAL MEANS AND COVARIANCES OF NORMAL VARIABLES WITH SINGULAR COVARIANCE MATRIX,
by George Marsaglia. Feb 63, 3p. (Rept. no. D1-82-0235)
Unclassified report

Also available from the author.

DESCRIPTORS: *Statistical analysis, Matrix algebra.

AD-299 090 Div. 15
(TISTP/WH) OTS price $2.60

Boeing Scientific Research Labs., Seattle, Wash.
ATOMIC ORTHOCOMPLEMENTED LATTICES,
by M. D. MacLaren. Jan 63, 25p. refs. (Rept. no. D1-82-0233; Mathematical note no. 286)
Unclassified report

Also available from the author.

DESCRIPTORS: *Mathematics, *Algebra.

AD-299 111 Div. 15
(TISTP/MB) OTS price $3.60

Applied Mathematics and Statistics Lab., Stanford U., Calif.
AN ACCURATE ALGORITHM FOR THE SOLUTION OF SIMULTANEOUS LINEAR ALGEBRAIC EQUATIONS,
by William M. McKeeman. 18 Jan 63, 1v. (Technical rept. no. 26)
(Contract Nonr-225(37))
Unclassified report

DESCRIPTORS: *Matrix algebra, Equations, Programming (Computers), Programming languages, Linear systems.

AD-299 112 Div. 15
(TISTP/MB) OTS price $1.60

Applied Mathematics and Statistics Lab., Stanford U., Calif.
COMPARISON OF THE VARIANCE OF MINIMUM VARIANCE AND WEIGHTED LEAST SQUARES REGRESSION COEFFICIENTS,
by Gene H. Golub. 18 Feb 63, 13p. tables. (Technical rept. no. 27)
(Contract Nonr-22537, Proj. NR 044 211)
Unclassified report

DESCRIPTORS: *Statistical analysis, Inequalities, Analysis of variance, Numerical analysis, Matrix algebra, Least squares method.

AD-299 120 Div. 15
(TISTP/MB) OTS price $1.10

Boeing Scientific Research Labs., Seattle, Wash.
EXPRESSING THE NORMAL DISTRIBUTION WITH COVARIANCE MATRIX A + B IN TERMS OF ONE WITH COVARIANCE MATRIX A,
by George Marsaglia. Feb 63, 6p. refs. (Rept. no. D1-82-0234; Mathematical note no. 287)
Unclassified report

Also available from the author.

DESCRIPTORS: *Statistical distributions, Probability, Integrals, Statistical analysis, Matrix algebra.

Division 16 - MEDICAL SCIENCES

AD-299 137 Div. 15, 18
(TISTP/MB) OTS price $2.60

RAND Corp., Santa Monica, Calif.
SOME ASPECTS OF NONLINEAR ALLOCATION PROCESSES,
by Robert Kalaba. Mar 63, 30p. (Rept. no. P-2715)
Unclassified report

DESCRIPTORS: *Operations research, Equations, Nonlinear systems, Industrial production, Armed forces operations, Economics, Scheduling.

AD-299 222 Div. 15, 30
(TISTP/TL) OTS price $2.60

Mathematics Research Center, U. of Wisconsin, Madison.
THE APPROXIMATE SOLUTION OF AXIALLY SYMMETRIC PROBLEMS: PROGRAMMING THE APPROXIMATE SOLUTION OF AXIALLY SYMMETRIC PROBLEMS,
by Donald Greenspan and M. Yohe. Jan 63, 23p. (MRC technical summary rept. no. 377)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Programming (Computers), *Numerical analysis, *Operators (Mathematics), Difference equations, Differential equations, Partial differential equations.

AD-299 223 Div. 15
(TISTP/TL) OTS price $3.60

Mathematics Research Center, U. of Wisconsin, Madison.
ON THE NUMERICAL SOLUTION OF PROBLEMS ALLOWING MIXED BOUNDARY CONDITIONS,
by Donald Greenspan. Dec 62, 34p. (MRC technical summary rept. no. 372)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Differential equations, *Polynomials, *Difference equations, Partial differential equations, Algebra, Numerical analysis.

AD-299 224 Div. 15
(TISTP/TL) OTS price $1.60

Mathematics Research Center, U. of Wisconsin, Madison.
THE F. AND M. RIESZ THEOREM FOR VECTOR MEASURES,
by Robert Ryan. Nov 62, 9p. (MRC technical summary rept. no. 370)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Topology, *Vector analysis, *Measure theory, Functional analysis, Convex sets, Integration.

AD-299 225 Div. 15
(TISTP/TL) OTS price $5.60

Mathematics Research Center, U. of Wisconsin, Madison.
PROCEDURES AND DESIGNS USEFUL FOR SCREENING MATERIAL IN SELECTION AND ALLOCATION WITH A BIBLIOGRAPHY,
by Walter T. Federer. Jan 63, 56p. (MRC technical summary rept. no. 368)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Statistical analysis, *Polynomials, *Sequential analysis, Probability, Sampling, Reliability, Bibliographies, Selection.

AD-299 226 Div. 15
(TISTP/TL) OTS price $3.60

Mathematics Research Center, U. of Wisconsin, Madison.
SOME EXTREMAL QUESTIONS FOR SIMPLICIAL COMPLEXES. V. THE RELATIVE AREA OF A KLEIN BOTTLE,
by L. C. Young. Nov 62, 32p. (MRC technical summary rept. no. 356)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Topology, *Calculus of variations, Inequalities.

AD-299 227 Div. 15
(TISTP/TL) OTS price $3.60

Mathematics Research Center, U. of Wisconsin, Madison.
A FREE BOUNDARY PROBLEM FOR THE LAPLACE EQUATION,
by Jan Odhnoff. Nov 62, 38p. (MRC technical summary rept. no. 357)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Topology, *Partial differential equations, *Convex sets, Inequalities, Harmonic analysis, Functions, Green's functions.

16. MEDICAL SCIENCES

AD-298 153 Div. 16
(TISTB/AW) OTS price $5.60

Westinghouse Electric Corp., Bath, N. Y.
STUDIES OF THE IMMUNOLOGICAL FACTORS INVOLVED IN HOMOLOGOUS TISSUE TRANSPLANTATION.
Progress rept. for 1 Mar 62-28 Feb 63,
by Charles A. Hubay. 28 Feb 63, 1v.
(Contract DA 49-007-md-961)
Unclassified report

DESCRIPTORS: *Transplantation, *Biochemistry, Antigen-antibody reactions, Laboratory animals, Kidneys, Skin, Tissues (Biology), Sensitivity, Immunity.

AD-298 160 Div. 16
(TISTB/CCH) OTS price $1.60

Naval Medical Research Inst., Bethesda, Md.
INTERFERENCE AND ITS ELIMINATION,
by Myron L. Wolbarsht. 15 June 62, 15p. (Research rept. MR 005.09-1401.04; rept. no. 2)
Unclassified report

DESCRIPTORS: *Noise, *Signals, *Sound, *Medical equipment, *Interference, Electrical equipment, Detection, Mechanical working.

AD-298 186 Div. 16
(TISTB/AW) OTS price $3.60

Aviation Medical Acceleration Lab., Naval Air Development Center, Johnsville, Pa.
EFFECT OF GRADIENT PRESSURE UPON PHYSIOLOGICAL SYSTEMS,
by C. S. Mahan, W. S. Lovrinic and others.
28 Dec 62, 28p. (Rept. no. NADC-MA-6218; rept. no. 1)
Unclassified report

DESCRIPTORS: *Dehydration, *Survival, *Urine, Heat transfer, Sea water, Temperature, Hypothermia, Body fluids, Life preservers, Body temperature.

AD-298 213 Div. 16
(TISTM/RGR) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
NERVES FROM METAL.
4 Feb 63, 2p. (Trans. no. FTD-TT-63-53; Trans. from Russian Newspaper, Uchitel'skogo Gazetak, p. 4, November 18, 1961)
Unclassified report

DESCRIPTORS: *Nerves, Laboratory animals, Dogs, Metals.

AD-298 218 Div. 16
(TISTB/CCH) OTS price $17.50

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
INFLUENCE OF IONIZING RADIATION ON THE FUNCTIONS OF THE CENTRAL NERVOUS SYSTEM,
by N. N. Livshits. 8 Feb 63, 1v. (Trans. no. FTD-TT-62-865; Trans. from Izdatel'stov Akademii Nauk SSSR, Moskva, pp. 1-180, 1961)
Unclassified report

DESCRIPTORS: *Brain, *Spinal cord, *Nervous system, *Cerebellum, Radiation effects.

AD-298 530 Div. 16
(TISTB/JAB) OTS price $16.50

Defense Documentation Center, Arlington, Va.
RADIOBIOLOGY.
Information Service Series Volume 2, No. 1.
Apr 63, 255p.
Unclassified report

DESCRIPTORS: *Radiobiology, *Bibliographies, Information retrieval, Vocabulary, Coding.

This volume contains titles and abstracts of all reports on radiobiology published between January 1958 and July 1962 and held in the ASTIA collection. An index by major subjects is also included. Recently initiated research projects which are not covered in the bibliographical section are listed in the appendix. A proposed radiobiology vocabular and cose sheets are also included.

AD-298 569 Div. 16
(TISTB/LMH) OTS price $2.60

Army Biological Labs., Fort Detrick, Md.
LAUNDRY BACTERIOLOGY: A REVIEW OF FUNDAMENTALS.
Rept. on Protective Measures for Personnel Engaged in the BW Program,
by Elizabeth C. Mayo. Feb 63, 23p.
(Proj. 4B11-05-015)
Unclassified report

DESCRIPTORS: *Decontamination, *Bacteria, Cleaning, Contamination, Textiles, Clothing.

AD-298 602 Div. 16
(TISTB/CCH) OTS price $2.60

Boston U. School of Medicine, Mass.
TURNOVER OF ESTERS PRODUCED FROM INOSINE IN HUMAN ERYTHROCYTE GHOSTS.
Annual progress rept., 1 May 62-30 Apr 63,
by Fabian J. Lionetti. 30 Apr 63, 19p.
(Contract DA 49-007-md-542)
Unclassified report

DESCRIPTORS: *Erythrocytes, *Blood cells, *Metabolism, *Phosphorylation, *Organic compounds, Ribose, Biochemistry, Biosynthesis.

AD-298 606 Div. 16
(TISTB/AW) OTS price $1.60

Army Biological Warfare Labs., Frederick, Md.
INCIDENCE AND PREVENTION OF ANTHRAX IN THE CISCAUCASIAN AND TRANSCAUCASIAN REPUBLICS,
by N. I. Makarov, N. A. Saleyev and others.
Jan 63, 9p. (Trans. no. 722 from Jnl. of Microbiology, Epidemiological and Immunobiology, 33:9, 105-111, 1962)
Unclassified report

DESCRIPTORS: *Bacillus anthracis, Epidemiology, Agriculture, Etiology, Man, Bovines, Soils, Diseases.

AD-298 632 Div. 16
(TISTB/AW) OTS price $1.60

Naval Radiological Defense Lab., San Francisco, Calif.
DIFFERENTIAL RADIOSENSITIVITY OF FIRST- AND SECOND-SET RESPONSES TO ALLOGENIC AND XENOGENIC SKIN GRAFTS IN LETHALLY IRRADIATED MICE,
by M. L. Tyan and L. J. Cole. 5 Feb 63, 20p.
(Rept. no. NRDL-TR-619)
Unclassified report

DESCRIPTORS: *Transplantation, *Radiobiology, X rays, Mice, Tissues (Biology), Theory, Sensitivity, Immunity, Skin.

AD-298 651 Div. 16
(TISTM/RGR) OTS price $3.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
THE ROLE OF BACTERIA IN THE CONVERSION OF THE CARBON PORTION AND OF THE ASPHALT RESIN COMPONENTS OF PARAFFIN-BASE PETROLEUM UNDER ANAEROBIC CONDITIONS,
by T. L. Simakova, N. V. Strigaleva and others.
6 Feb 63, 39p. (Trans. no. FTD-TT-62-1449; Trans. from Geokhimicheskiy Sbornik, Gostoptekhizdat, no. 7, pp. 77-97, 1961)
Unclassified report

DESCRIPTORS: *Petroleum, *Bacteria, Pseudomonas, Decomposition, Fatty acids, Aromatic compounds, Aliphatic compounds, Asphalt, Gases, Carbon compounds, Metabolism.

AD-298 659 Div. 16
(TISTB/AW) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
RESTITUTION OF THE ELECTROENCEPHALOGRAM AFTER HYPOTHERMIA,
by P. M. Starkov and Ye. K. Aganyants. 18 Feb 63, 16p. (Trans. no. FTD-TT-62-1904 from Fiziologicheskiy Zhurnal SSSR Umeni I. M. Sechenova, vol. 48, no. 6, pp. 629-637, 1962)
Unclassified report

DESCRIPTORS: *Hypothermia, Body temperature, Cerebral cortex, Electrical properties, Electroencephalography.

AD-298 742 Div. 16, 3
(TISTB/AW) OTS price $5.60

Naval Ordnance Test Station, China Lake, Calif.
PORPOISE PERFORMANCE TESTS IN A SEA-WATER TANK,
by Thomas G. Lang and Dorothy A. Daybell.
Jan 63, 50p. (NOTS TP 3063)
(NAVWEPS rept. no. 8060) Unclassified report

DESCRIPTORS: *Cetacea, *Hydrodynamics, Test methods, Instrumentation, Conditioned response, Equations, Motion, Acceleration, Drag, Boundary layer, Theory, Fluid dynamic properties.

Division 16 - MEDICAL SCIENCES

AD-298 769 Div. 16
(TISTB/LMH) OTS price $1.10

Massachusetts Inst., of Tech., Cambridge.
PROTEIN REQUIREMENTS AS A FUNCTION OF CALORIE INTAKE AND WORK LOAD.
Supplement to progress rept., 1 Apr-31 Oct 62,
by Donald M. Watkin. 31 Oct 62, 2p.
(Contract DA 49-193-md-2264)
Unclassified report

DESCRIPTORS: *Diet, Exercise, Physical fitness, Metabolism, Nutrition, Stress (Psychology), Vitamin B complex.

AD-298 905 Div. 16
(TISTB/AW) OTS price $1.60

World Life Research Institute, Colton, Calif.
AN INVESTIGATION OF CIGUATERA POISON.
Final rept., 1 June 61-30 Sep 62,
by Bruce W. Halstead, Donald W. Hessel, and John Suchy. 8 Mar 63, 9p.
(Grant DA-CML-18-108-61-G-19; Continuation of Contract DA 18-108-405-cml-800)
Unclassified report

DESCRIPTORS: *Toxins & Antitoxins, *Fishes, Tropical regions, Algae, Poisoning, Muscles, Solvent extraction, Purification, Toxicity.

AD-298 906 Div. 16
(TISTB/AW) OTS price $.50

Biomedical Lab., Aerospace Medical Div., Wright-Patterson Air Force Base, Ohio.
EFFECT OF VAPOR PRESSURE ON PHYSIOLOGIC STRAIN AND BODY HEAT STORAGE.
Final rept. on Biophysics of Flight,
by John F. Hall, Jr. Dec 62, 8p.
(Proj. no. 7222)
(AMRL-TDR-62-147) Unclassified report

DESCRIPTORS: *Stress (Physiology), *Perspiration, Evaporation, Heat rransfer, Body temperature, Humidity.

AD-298 936 Div. 16
(TISTB/AW) OTS price $.50

Biomedical Lab., Aerospace Medical Div., Wright-Patterson Air Force Base, Ohio.
ENDORADIOSONDES: A STATE OF THE ART SURVEY.
Final rept. on Biophysics of Flight,
by Michael McCally and George W. Barnard. Dec 62, 9p.
(Proj. no. 7222)
(AMRL-TDR-62-122) Unclassified report

DESCRIPTORS: *Radio transmitters, *Biophysics, Instrumentation, Surgery, PH, Temperature, Pressure, Gastrointestinal system, Physiology.

AD-298 947 Div. 16
(TISTB/AW) OTS price $1.10

Oregon U., Medical School, Portland.
FURTHER STUDIES ON THE HUMAN ECCRINE SWEAT GLAND.
Annual progress rept., 15 Feb 62-15 Feb 63,
by Richard L. Dobson. 15 Feb 63, 6p.
(Contract DA-49-193-MD-2176)
Unclassified report

DESCRIPTORS: *Perspiration, *Secretion, Cells (Biology), Sodium compounds, Chlorides, Glycogen, Glands.

AD-298 968 Div. 16
(TISTB/AW) OTS price $2.60

6570th Aerospace Medical Research Labs., Aerospace Medical Div., Wright-Patterson Air Force Base, Ohio.
A PRELIMINARY STUDY OF THE ELECTRICAL RESPONSE TO ACOUSTIC STIMULI OF NEURONS OF THE GUINEA PIG AUDITORY CORTEX.
Report on Research on the Logical Structure and Function of the Nervous System,
by E. A. Rice. Jan 63, 19p. (AMRL memo. no. M-19)
(Proj. 7232)
Unclassified report

DESCRIPTORS: *Nerve cells, *Brain, Classification, Instrumentation, Electrodes, Laboratory animals, Physiology, Cerebral cortex, Sound.

AD-298 973 Div. 16
(TISTB/AW) OTS price $4.60

RAND Corp., Santa Monica, Calif.
A SURVEY OF EXOBIOLOGY,
by Paul G. Seybold. Mar 63, 43p. (Memo. no. RM-3178-PR)
(Contract AF 49(638)700, Proj. RAND)
Unclassified report

DESCRIPTORS: *Biology, *Space biology, Mars, Venus, Contamination, Space probes, Moon, Organic materials, Ecology, Bibliographies, Planets, Feasibility studies.

AD-299 008 Div. 16, 4, 25
(TISTM/RGR) OTS price $8.10

Connecticut U., Storrs.
THE PRODUCTION AND DETECTION OF FREE RADICALS BY CHEMICAL AND SPECTROGRAPHIC METHODS.
Final rept., 29 Oct 60-28 Oct 62,
by Roy J. Gritter. 29 Oct 60, 1v. (Rept. no. 8)
(Contract DA 19-129-qm-1708)
Unclassified report

DESCRIPTORS: *Radiation damage, *Proteins, *Free radicals, *Organic compounds, Molecular structure, Bibliographies, Ultraviolet radiation, Chemical reactions, Pyrolysis, Reaction kinetics, Synthesis (Chemistry), Decomposition, Chemical bonds, Stereochemistry, Photochemistry, Biochemistry.

AD-299 014 Div. 16, 31, 4, 30
(TISTM/ODN) OTS price $7.60

Thompson Ramo Wooldridge Inc., Cleveland, Ohio.
THE REDUCTION OF CARBON DIOXIDE USING A FLUIDIZED CATALYST BED.
Final rept.
15 Dec 62, 77p. (Rept. no. ER-5159)
(Contract Nonr 343100)
Unclassified report

DESCRIPTORS: *Carbon dioxide, *Controlled atmospheres, *Submarines, Chemical reactions, Catalysts, Catalysis, Hydrogen, Tests, Heat exchangers, Ammonia, Carbon, Water, Oxygen, Iron, Powder metals, Heat of reaction, Gases, High temperature research, Nitrogen, Carbon compounds, Monoxides, Reaction kinetics, Temperature, Thermodynamics, Iron compounds, Carbides, Reduction (Chemistry).

AD-299 018 Div. 16
(TISTB/AW) OTS price $2.25

Southwest Research Inst., San Antonio, Tex.
A STUDY OF MICROBIOLOGICAL WASTE TREATMENT TECHNIQUES.
Final rept., Mar 61-Mar 62 on Space Biology Research,

by Frederick W. Bieberdorf. Nov 62, 83p.
(Contract AF 33(616)8153, Proj. 7164)
(AMRL TDR 62-142) Unclassified report

DESCRIPTORS: *Closed-cycle ecological systems, *Microorganisms, Carbon, Metabolism, Photosynthesis, Urine, Disposal, Biosynthesis, Organic materials, Feasibility studies, Combustion, Oxidation, Storage, Dehydration, Oxygen, Carbon dioxide, Sanitary engineering.

AD-299 067 Div. 16
(TISTB/AW) OTS price $1.10

Army Biological Labs., Fort Detrick, Md.
EPIDEMIOLOGICAL AND CLINICAL CHARACTERISTICS OF ANTHRAX,
by A. Ya. Zaporozhchenko. 22 Jan 63, 8p. (Rept. no. FD2-3742(T-35-3); Trans. no. 723 from Jrnl. of Microbiology, Epidemiology and Immunobiology, 33:9, pp. 111-115, 1962)
Unclassified report

DESCRIPTORS: *Bacillus anthracis, Epidemiology, Distribution, Diseases.

AD-299 068 Div. 16
(TISTB/AW) OTS price $1.10

Army Biological Labs., Fort Detrick, Md.
AN OUTBREAK OF ANTHRAX ALONG THE ARZAMAS-GORKY CATTLE DRIVING TRAIL,
by M. K. Timofeyev, V. I. Karelina, and I. P. Kolushev. 22 Jan 63, 7p. (Rept. no. FD2-3742(T-35-1); Trans. no. 721 from Jrnl. of Microbiology, Epidemiology and Immunobiology 33:7, pp. 32-35, 1962)
Unclassified report

DESCRIPTORS: *Bacillus anthracis, Bovines, Man, Veterinary medicine, Epidemiology, Diseases.

AD-299 096 Div. 16
(TISTB/AW) OTS price $1.10

Army Biological Labs., Fort Detrick, Md.
HYBRIDIZATION OF AEDES (STEGOMYIA) AEGYPTI L. AND AEDES (STEGOMYIA) ALBOPICTUS SKUSE,
by C. Toumanoff. Jan 63, 8p. (Trans. no. 720 from Bulletin de la Societe de Pathologie Exotique (Jrnl. of the Society for Exotic Pathology), 43:pp. 234-240, France, 1950)
Unclassified report

DESCRIPTORS: *Culicidae, Reproduction (Physiology).

AD-299 116 Div. 16
(TISTB/CCH) OTS price $2.60

Linde Co., Div. of Union Carbide Corp., Tonawanda, N. Y.
RESEARCH ON PROCEDURES FOR THE LOW-TEMPERATURE PRESERVATION OF BLOOD.
Progress rept. no. 13, June 62-Feb 63,
by A. P. Rinfret. 20 Mar 63, 18p.
(Contract Nonr-300300)
Unclassified report

DESCRIPTORS: *Blood, *Preservation, Freezing, Processing.

AD-299 117 Div. 16, 29
(TISTB/AW) OTS price $1.60

Quartermaster Food and Container Inst. for the Armed Forces, Chicago, Ill.
FOOD PRODUCTION BY TISSUE CULTURE TECHNIQUES.
Interim rept.,
by Anne F. Byrne. Feb 63, 18p. (AMXFC rept. no. 2-63)
(Proj. 7X84-13-002)
Unclassified report

DESCRIPTORS: *Tissues (Biology), *Food, Culture media, Plants (Botany), Vegetables, Growth, Casein, Production.

AD-299 144 Div. 16, 4
(TISTM/EJH) OTS price $1.10

Connecticut U., Storrs.
THE ALKALOIDS OF WITHANIA SOMNIFERA.
Final rept., 1 Sep 60-31 Aug 62,
by Arthur E. Schwarting. 15 Nov 62, 4p.
(Contracts DA CML-18-108-61-G-1 and DA CML-18-108-G-35)
Unclassified report

DESCRIPTORS: *Alkaloids, *Organic compounds, Plants (Botany), Chemical bonds, Spectra (Infrared), Molecular structure, Synthesis (Chemical), Molecular isomerism, Chromatographic analysis, Hypnotics & sedatives, Drugs, Chemical analysis, Pharmacology.

AD-299 249 Div. 16, 29
(TISTB/AW) OTS price $2.60

Quartermaster Food and Container Inst. for the Armed Forces, Chicago, Ill.
DEVELOPING AN UNCONVENTIONAL FOOD, ALGAE, BY CONTINUOUS CULTURE UNDER HIGH LIGHT INTENSITY.
Interim rept.,
by Robert O. Matthern and Robert B. Koch.
Feb 63, 28p. (AMXFC rept. no. 1-63)
Unclassified report

DESCRIPTORS: *Food, *Algae, *Closed-cycle ecological systems, Culture media, Instrumentation, Laboratory equipment, Operation, Illumination, Production.

AD-299 258 Div. 16
(TISTB/CCH) OTS price $3.60

Tennessee U., Knoxville.
BACTERIAL METABOLISM OF PYRIMIDINES.
Final rept., 1 Oct 60-31 Mar 63,
by H. G. Biggs, Basil Doumas and others.
31 Mar 63, 35p.
(Contract DA 49-193-md-2129)
Unclassified report

DESCRIPTORS: *Corynebacterium, *Metabolism, *Organic compounds, *Nucleic acids, Inhibition, Urine, Rats, Desoxyribonucleic acids, Ribonucleic acids, Labeled substances, Carbon, Biochemistry, Biosynthesis.

AD-299 288 Div. 16
(TISTB/AW) OTS price $2.60

Puerto Rico U. School of Medicine, San Juan.
STUDIES ON ACUTE AND CHRONIC MANSON'S SCHISTOSOMIASIS.
Progress rept., 1 Mar 62-Feb 63,
by F. Ramos-Morales. Feb 63, 3p. tables.
(Contract DA 49-007-md-649)
Unclassified report

DESCRIPTORS: *Schistosoma, Analysis, Diagnosis, Spleen, Liver, Eosinophils, Hypertension, Gamma globulin, Complement, Diseases.

AD-299 364 Di.. 16
(TISTB/AW) OTS price $1.60

Tulane U., School of Medicine, New Orleans, La.
STUDIES OF RESPIRATORY FUNCTION FOLLOWING THORACIC AND THORACO-ABDOMINAL INJURIES: (1) PULMONARY COMPLIANCE, (2) ALVEOLAR VENTILATION, (3) INSPIRED GAS DISTRIBUTION, (4) VENTILATION AND GAS EXCHANGE, (5) VENTILATION-PERFUSION IMBALANCE,
by Morton M. Ziskind and Oscar Creech, Jr.
28 Mar 63, 1v.
(Contract DA 49-007-md-796)
Unclassified report

DESCRIPTORS: *Wounds and injuries, *Lungs, Respiration, Oxygen, Carbon dioxide, Oxygen consumption, Absorption, Pathology, Thorax.

17. METALLURGY

AD-298 177 Div. 17
(TISTM/ODN) OTS price $.50

Naval Research Lab., Washington, D. C.
CRACK TOUGHNESS OF TWO HIGH-STRENGTH SHEET STEELS.
Interim rept.,
by J. E. Srawley, T. C. Lupton, and W. S. Kenton, Sr. 13 Feb 63, 11p. (NRL rept. no. 5895)
Unclassified report

DESCRIPTORS: *Steel, Sheets, Heat treatment, Fracture (Mechanics), Tensile properties, Surfaces, Experimental data, Tests, Mechanical properties.

AD-298 185 Div. 17
(TISTM/AM) OTS price $.50

Naval Research Lab., Washington, D. C.
AN ELECTRON FRACTOGRAPHIC STUDY OF THE MECHANISMS OF DUCTILE RUPTURE IN METALS,
by C. D. Beachem. 31 Dec 62, 17p. (NRL rept. no. 5871)
Unclassified report

DESCRIPTORS: *Fracture (Mechanics), *Metals, Ductility, Shear stresses, Fractography, Microstructure, Electron microscopy, Steel, Analysis, Rupture.

AD-298 196 Div. 17
(TISTM/ODN) OTS price $1.10

Armour Research Foundation, Chicago, Ill.
FIBER-REINFORCED METALS AND ALLOYS.
Bimonthly rept. no. 5, 4 Dec 62-4 Feb 63,
by N. M. Parikh, R. L. Hodson, and M. Malatesta.
6 March 63, 7p. (Rept. no. ARF-B241-5)
(Contract NOw-62-0650-c)
Unclassified report

DESCRIPTORS: *Reinforcing materials, *Metallic textiles, *Aluminum alloys, Composite materials, Elasticity, Tensile properties, Mechanical properties, Chemical milling, Manufacturing methods, Beryllium.

AD-298 204 Div. 17
(TISTM/ODN) OTS price $3.60

Defense Metals Information Center, Columbus, Ohio.
A DISCUSSION OF THE FRACTURE TOUGHNESS OF SEVERAL STAINLESS STEELS IN SHEET FORM,
by F. J. Barone and A. M. Hall. 31 Jan 63, 1v. (DMIC memo. no. 164)
(Contract AF 33(616)7747, Proj. 2(8-8975))
Unclassified report

DESCRIPTORS: *Stainless steel, Stresses, Sheets, Heat treatment, Tensile properties, Tests, Experimental data, Fracture (Mechanics), Tables, Mechanical properties.

AD-298 292 Div. 17, 26
(TISTM/BRW) OTS price $2.60

Nuclear Metals Inc., Cambridge, Mass.
DEVELOPMENT OF DIES FOR EXTRUSION OF COMPLEX SHAPES OF STEEL AND REFRACTORY ALLOYS.
Interim technical documentary progress rept. no. 2, 16 Sep-31 Dec 62,
by J. G. Hunt, R. G. Jenkins and others.
4 Mar 63, 19p. (Rept. no. NMI-9700.6)
(Contract AF 33(657)8798, Proj. 7-946)
Unclassified report

DESCRIPTORS: *Dies, Steel, Heat resistant metal and alloys, Ceramic materials, Metals, Composite materials, High temperature research, Extrusion.

AD-298 559 Div. 17
(TISTM/AM) OTS price $3.60

Watervliet Arsenal, N. Y.
EXPERIMENTAL INVESTIGATION OF THE FATIGUE BEHAVIOR OF THREAD-TYPE PROJECTIONS,
by R. E. Weigle, R. R. Lasselle, and J. P. Purtell. Dec 62, 32p. (Technical rept. no. WVT-RR-6219)
(DA Proj. 5B97-01-006)
Unclassified report

DESCRIPTORS: *Fatigue (Mechanics), Machines, Design, Experimental data, Tests, Stresses, Loading (Mechanics), Screw threads.

AD-298 563 Div. 17
(TISTM/AM) OTS price $2.60

Astronuclear Lab., Westinghouse Electric Corp., Pittsburgh, Pa.
PILOT PRODUCTION AND EVALUATION OF TANTALUM ALLOY SHEET.
Quarterly rept. no. 3, 16 Oct 62-16 Jan 63,
by R. L. Ammon and R. T. Begley. 16 Feb 63, 25p.
(Rept. no. WANL-PR-M-003)
(Contract NOw 62-0656-d)
Unclassified report

DESCRIPTORS: *Tantalum alloys, Alloys, Hafnium alloys, Tungsten alloys, Resistance (Electrical), High-temperature research, Thermal expansion, Recrystallization, Experimental data, Sheets, Impurities, Analysis, Reports, Carbon, Oxygen, Nitrogen, Ductility, Welds, Low-temperature research, Mechanical properties.

AD-298 583 Div. 17
(TISTM/AM) OTS price $1.60

Materials Research Lab., U. of Calif., Berkeley.
THERMAL PROPERTIES OF ALLOYS AT HIGH TEMPERATURES.
Final rept.,
by Raymond L. Orr and Ralph Hultgren. 1 Mar 63, 10p. (Series 137, Issue 8)
(Contract AF 49(638)83)
Unclassified report

DESCRIPTORS: *Alloys, Metals, Thermodynamics, Enthalpy, Specific heat, High-temperature research.

AD-298 680 Div. 17
(TISTM/BRW) OTS price $1.60

Armour Research Foundation, Chicago, Ill.
EMBRITTLEMENT OF METALS BY ORGANIC LIQUIDS.
Quarterly rept., 1 Dec 62-28 Feb 63,
by W. Rostoker. 5 Mar 63, 14p. (Rept. no. ARF-B183-13)
(Contract DA-11-ORD-022-3108)
Unclassified report

DESCRIPTORS: *Metals, *Organic materials, Mechanical properties, Single crystals, Fracture (Mechanics), Aluminum alloys, Iron alloys, Steel, Brittleness, Liquids.

AD-298 696 Div. 17
(TISTM/AM) OTS price $2.60

Narmco Industries Inc., San Diego, Calif.
THE INVESTIGATION OF EXOTHERMIC BRAZING OF REFRACTORY ALLOYS.
Quarterly rept. no. 1, 1 Nov 62-31 Jan 63,
by R. O. Banning, J. R. Armstrong, and R. A. Long. 28 Feb 63, 15p.
(Contract N600(19)59237)
Unclassified report

DESCRIPTORS: *Silver solders, *Heat resistant metals & alloys, Experimental data, Niobium alloys, Molybdenum alloys, Tungsten alloys, Heat of formation, Temperature, Ignition, Oxidation-reduction reactions, Tantalum alloys, Thermite, Brazing.

AD-298 718 Div. 17, 14
(TISTM/AM) OTS price $7.60

Materials Research Lab., U. of Calif., Berkeley.
DILATION CONTRIBUTION TO HEAT CAPACITY OF METALS AND ALLOYS,
by Yong-Shan Austin Chang and Ralph Hultgren.
1 Jan 63, 77p. (Technical note no. 7; Series no. 137, Issue no. 7)
(Contract AF 49(638)83)
Unclassified report

DESCRIPTORS: *Specific heat, *Crystal lattices, *Thermodynamics, *Solids, Experimental data, Theory, Metals, Copper, Brass, Chemical analysis, Bibliographies, Bonding, Ultrasonic radiation, Measurements, Test methods, Cryogenics, High-temperature research, Low-pressure research, Plastics, Analysis, Equation of state, Vibration, Alloys.

AD-298 740 Div. 17, 25
(TISTM/BRW) OTS price $10.50

Johns Hopkins U., Baltimore, Md.
REACTION OF FINE METAL WIRES TO IMPOSED LOADS,
by P. W. Kingman, Robert E. Green, Jr., and Robert B. Pond, Sr. Jan 63, 140p.
(Contract DA 36-034-509-ORD-3377)
Unclassified report

DESCRIPTORS: *Metals, Deformation, Compressive properties, Cylindrical bodies, Metallic crystals, Crystal growth, Aluminum, Test methods, Wire.

AD-298 765 Div. 17
(TISTM/BRW) OTS price $6.00

Lockheed Aircraft Corp., Marietta, Ga.
DETERMINATION OF DESIGN DATA FOR HEAT TREATED TITANIUM ALLOY SHEET. VOLUME 2a. DETAILS OF DATA COLLECTION PROGRAM. TEST TECHNIQUES AND RESULTS FOR TENSION, COMPRESSION, BEARING, SHEAR, CRIPPLING, JOINTS, AND PHYSICAL PROPERTIES.
Final technical engineering rept., 31 Mar 59-31 Mar 62 on Materials Application,
by W. M. McGee and B. R. Matthews. Dec 62, 413p.
(Contract AF 33(616)6346, Proj. 7381)
(ASD TDR 62-335, vol. 2a) Unclassified report

DESCRIPTORS: *Titanium alloys, Sheets, Design, Data, Tensile properties, Compressive properties, Shear stresses, Joints, Test methods, Vanadium alloys, Chromium alloys, Aluminum alloys, Molybdenum alloys, Mechanical properties.

AD-298 775 Div. 17
(TISTM/AM) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, OHIO.
MECHANICAL WORKING BY CUTTING OF METAL POWDER ANTIFRICTION MATERIALS,
by A. Ya. Artamonov. 13 Feb 63, 19p. (Trans. no. FTD-TT-62-1472 from Geokhimicheskiy Sbornik, no. 7, pp. 63-74, 1961)
Unclassified report

DESCRIPTORS: *Cermets, *Machining, *Machine tools, Bearings, Mechanical working, Powder metallurgy, Powder metals, Experimental data, Porous metals, Antifriction bearings, Steel, Friction.

AD-298 788 Div. 17
(TISTM/AM) OTS price $1.60

Keck, W. M., Lab. of Engineering Materials, Calif. Inst. of Tech., Pasadena.
SOLID SOLUTIONS IN SILVER-PLATINUM ALLOYS,
by W. Klement Jr. and H. L. Luo. Jan 63, 9p.
(Technical rept. no. 11)
(Contracts AT-043221 and Nonr-22030)
Unclassified report

DESCRIPTORS: *Alloys, *Crystal structure, *Phase studies, Platinum alloys, Palladium alloys, Silver alloys, X-ray diffraction analysis, Data, Crystal lattices.

AD-298 812 Div. 17
(TISTM/BRW) OTS price $5.00

Lockheed Aircraft Corp., Marietta, Ga.
DETERMINATION OF DESIGN DATA FOR HEAT-TREATED TITANIUM ALLOY SHEET. VOLUME 2B. TEST TECHNIQUES AND RESULTS FOR CREEP AND FATIGUE.
Final rept., 31 Mar 59-31 Mar 62 on Materials Application,
by D. L. White and H. T. Watson. Dec 62, 358p.
(Contract AF 33(616)6346, Proj. 7381)
(ASD TDR 62-335, vol. 2b)
Unclassified report

DESCRIPTORS: *Titanium alloys, Creep, Fatigue (Mechanics), Data, Test methods, Sheets, Vanadium alloys, Chromium alloys, Aluminum alloys, Molybdenum alloys, Mechanical properties.

AD-298 937 Div. 17
(TISTM/AM) OTS price $1.60

Armour Research Foundation, Chicago, Ill.
DISPERSION-STRENGTHENED VANADIUM ALLOYS.
Bimonthly rept. no. 1, 14 Dec 62-13 Feb 63.

by F. C. Holtz. 12 Mar 63, 13p. (Rept. no. ARF-B6007-1)
(Contract N600(19)59567)
Unclassified report

DESCRIPTORS: *Vanadium alloys, *Dispersion hardening, Powder metallurgy, Niobium alloys, Titanium alloys, Sintering, Density, Zirconium, Hafnium, Impurities, High-temperature research, Refractory materials, Sheets, Oxygen, Carbon, Nitrogen, Mechanical properties, Tantalum alloys, Hardness, Additives, Preparation.

AD-298 962 Div. 17, 25
(TISTM/AMS) OTS price $1.60

Metallurgical Research Labs., Syracuse U., N. Y.
CRACK INITIATION IN METALLIC MATERIALS.
Quarterly progress rept. no. 1,
by K. Schroder, P. Packman, and V. Weiss.
Feb 63, 15p. illus. (Rept. no. MET. E. 1040-6302Q1)
(Contract N6001959514)
Unclassified report

DESCRIPTORS: *Fracture (Mechanics), *Metals, Acrylic resins, Tungsten, Lithium compounds, Fluorides, Recrystallization, Crystal lattice defects, Crystal lattices, Grain structures, Theory, Temperature, Surface properties, Ductility.

AD-299 015 Div. 17
(TISTM/AM) OTS price $5.60

Aerojet-General Corp., Sacramento, Calif.
EVALUATION OF HIGH-NICKEL STEEL FOR APPLICATION IN LARGE BOOSTER MOTOR FABRICATION.
Quarterly progress rept. no. 2, Oct-Dec 62.
Jan 63, 22p. illus. tables (Rept. no. 0705-82Q-2)
(Contract AF 33(657)8740)
Unclassified report

DESCRIPTORS: *Steel, *Aging, *Martensite, Nickel alloys, Melting, Processing, Metal plates, Metallography, Rocket cases, Chemical analysis, Impurities, Experimental data, Analysis, Welding, Welds, Effectiveness, Low-pressure research, Tensile properties, Rolling mills, Mechanical properties.

AD-299 145 Div. 17
(TISTM/BRW) OTS price $4.60

Republic Aviation Corp., Farmingdale, N. Y.
B-120VCA TITANIUM ALLOY EXTRUSION PROGRAM.
Interim technical engineering rept., 16 Nov 62-16 Feb 63,
by Murray H. Levine. 16 Feb 63, 45p.
(Contract AF 33(657)8746, Proj. 8-103)
(ASD TR 8-103, pt. 2) Unclassified report

DESCRIPTORS: *Titanium alloys, Vanadium alloys, Chromium alloys, Aluminum alloys, Dies, Ceramic coatings, Manufacturing methods, Drawing (Machine processing), Deformation, Heat treatment, Microstructure, Extrusion.

AD-299 235 Div. 17, 14
(TISTM/BRW) OTS price $2.60

Snell, Foster D., Inc., New York.
DEVELOPMENT OF ULTRA-THIN FILM PRESERVATIVE COMPOUNDS.
Quarterly rept. no. 1, 1 Nov 62-31 Jan 63,
by William Miglas and Bernard Berkeley.
27 Feb 63, 19p.
(Contract NOw 63-0293-c)
Unclassified report

DESCRIPTORS: *Metals, *Coatings, *Corrosion inhibition, Steel, Polymers, Films, Soaps, Fatty acid esters, Fatty acids, Materials.

AD-299 262 Div. 17
(TISTM/AM) OTS price $6.60

Michigan U. Coll. of Engineering, Ann Arbor.
INVESTIGATION OF LIQUID METAL BOILING HEAT TRANSFER.
Quarterly progress rept. no. 4,
by Richard E. Balzhiser, Robert E. Barry and others. Feb 63, 43p. illus. (Rept. no. 04526-14-P)
(Contract AF 33(616)8277, Proj. 04526)
Unclassified report

DESCRIPTORS: *Liquid metals, *Heat transfer, *Film boiling, Laboratory equipment, Pipes, Boiler tubes, Boilers, Design, Potassium, Data, Nucleate boiling, Alkali metals.

AD-299 321 Div. 17
(TISTM/AM) OTS price $.50

Watertown Arsenal Labs., Mass.
AGING RESPONSE OF 18% NI-CO-MO STEEL,
by S. V. Arnold. Feb 63, 13p. (Technical rept. no. WAL-TR-320.1/11)
(DA Proj. I-H-0-24401-A-111)
Unclassified report

DESCRIPTORS: *Aging, *Steel, Heat treatment, Nickel alloys, Cobalt alloys, Molybdenum alloys, Hardness, Chemical analysis, Tensile properties, Mechanical properties, Tables, Microstructure, Hardening.

AD-299 322 Div. 17
(TISTM/AM) OTS price $2.60

Watertown Arsenal Labs., Mass.
THE NOTCH PROPERTIES AND SHEAR TRANSITIONAL BEHAVIOR OF H11 STEEL,
by Joseph L. Sliney and Fred Schmid. Feb 63, 27p. (Technical rept. no. WAL-TR-766.5/2)
(DA Proj. 59332008)
Unclassified report

DESCRIPTORS: *Steel, *Shear stresses, Fractography, Chemical analysis, Low-temperature research, Tables, Heat treatment, Tensile properties, Impact shock, Fracture (Mechanics).

AD-299 362 Div. 17, 25, 8
(TISTM/AM) OTS price $6.60

Lockheed Aircraft Corp., Sunnyvale, Calif.
SOLID STATE PROPERTIES OF BISMUTH AND TELLURIUM ALLOYS AND COMPOUNDS: AN ANNOTATED BIBLIOGRAPHY,
comp. by. P. R. Stromer. Feb 63, 65p. (Special bibliography no. SB-62-62; Rept. no. 6-90-62-12)
Unclassified report

DESCRIPTORS: *Bibliographies, *Semiconductors, Intermetallic compounds, Bismuth alloys, Tellurium alloys, Impregnation, Impurities, Crystal lattices, Anisotropy, Thermal conductivity, Piezoelectric crystals, Single crystals, Additives, Photoconductivity, Phonons, Microscopy, Deformation, Analysis of variance, Solid state physics.

AD-299 397 Div. 17
(TISTM/AM) OTS price $1.60

Aeroprojects Inc., West Chester, Pa.
INVESTIGATION OF ULTRASONIC WELDING OF REFRACTORY METALS AND ALLOYS.
Bimonthly progress rept. no. 2, 16 Oct-16 Dec 62.
Jan 63, 6p.
(Contract NOw 63-0125-c)
Unclassified report

DESCRIPTORS: *Heat-resistant metals and alloys, *Ultrasonic radiation, Molybdenum, Molybdenum alloys, Titanium alloys, Data, Hydraulic systems, Welding.

18. MILITARY SCIENCES AND OPERATIONS

AD-298 245 Div. 18, 6
(TISTW/RD) OTS price $9.60

System Development Corp., Santa Monica, Calif.
PROCEEDINGS OF THE SYMPOSIUM ON OPERATIONS RESEARCH AT SDC: PART I, HISTORICAL PERSPECTIVE,
by Claude Baum and Doris Rhine. 1 Mar 63, 115p.
(Technical memo. no. TM-1042/000/00)
Unclassified report

DESCRIPTORS: *Symposia, *Operations research, *Command & control systems, *Antiaircraft defense systems, Aircraft intercept control systems, Early warning systems, Reliability, Track-while-scan radar, Guided missiles (Surface-to-surface), Mobile, Digital systems, Antimissile defense systems, Satellites (Artificial), Games theory, Scheduling, Training, Computers, Data processing systems.

AD-298 713 Div. 18
(TISTB/AW) OTS price $1.60

System Development Corp., Santa Monica, Calif.
SIMULATION OF MILITARY LOGISTICS OPERATION IN AN UNDERDEVELOPED COUNTRY,
by J. E. Walsh and James L. Taylor. 22 Feb 63, 11p. (Rept. no. SP-1090/000/01)
Unclassified report

DESCRIPTORS: *Logistics, Game theory, Simulation.

AD-298 773 Div. 18
(TISTB/AW) OTS price $4.60

Operations Analysis Office, Air Force, Washington, D. C.
AN OPERATIONS ANALYSIS OF THE MATERIEL REPAIR SYSTEM,
by Irving Katz. October 59, 41p. (Operations analysis rept. no. 1)
Unclassified report

DESCRIPTORS: *Operations research, Maintenance, Supply depots, Armed forces supplies, Air force equipment, Logistics.

AD-298 786 Div. 18
(TISTW/RD) OTS price $1.60

Operations Evaluation Group, Office of Naval Operations.
COMBAT EFFECTIVENESS OF ALLIED AND GERMAN TROOPS IN THE WORLD WAR II INVASION OF CRETE,
by J. H. Engel. 8 Feb 63, 12p. (Interim research memo. no. IRM-35)
Unclassified report

DESCRIPTORS: *Warfare, Armed forces operations, Casualties.

AD-299 291 Div. 18, 8
(TISTP/TL) OTS price $3.60

Institute of Science and Tech., U. of Michigan, Ann Arbor.
PROBABILISTIC INFORMATION PROCESSING IN COMMAND AND CONTROL SYSTEMS,
by Ward Edwards. Mar 63, 34p. (Scientific rept. no. 3780-12-T)
(Contract AF 19(604)7393)
(ESD TDR 62-345) Unclassified report

DESCRIPTORS: *Command & control systems, *Communications theory, Cybernetics, Data processing systems, Design, Probability.

19. NAVIGATION

AD-298 308 Div. 19
(TISTW/RD) OTS price $6.60

National Aviation Facilities Experimental Center, Atlantic City, N. J.
EVALUATION OF GENERAL AVIATION TRANSPONDERS.
Interim rept.,
by R. H. Boutillette, R. W. Delaney, and W. Herget. Nov 62, 48p.
(Proj. 108-8V)
Unclassified report

DESCRIPTORS: *Transponders, *Radar beacons, Air traffic control systems, Flight testing, Transmitter-receivers, Airborne, Ultra high frequency.

AD-298 658 Div. 19
(TISTP/FR) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
A SYSTEM FOR BALANCING AND DETERMINING THE TRIM OF FLOAT-TYPE GYROSCOPES,
by Yu. I. Paramonov. 5 Mar 63, 5p. (Trans. no. FTD-TT-62-1880 from Soviet Patent Nr. 147831 (744457/26-10), 1p., 12 Sep 61)
Unclassified report

DESCRIPTORS: *Gyroscopes, *Floats.

AD-298 660 Div. 19
(TISTP/FR) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
A METHOD OF BALANCING THE FLOAT IN FLOAT-TYPE GYROSCOPE DEVICES,
by V. P. Lymar'. 5 Mar 63, 3p. (Trans. no. FTD-TT-62-1881 from Soviet Patent Nr. 147832 (745602/26-10), 1p., 25 Sep 61)
Unclassified report

DESCRIPTORS: *Gyroscopes, *Floats.

AD-299 273 Div. 19
(TISTW/FEM) OTS price $9.10

Raytheon Co., Bedford, Mass.
INVESTIGATION OF ACTIVE DOPPLER VELOCITY SENSOR.
Quarterly engineering rept. no. 3, 1 Dec 62-28 Feb 63.
Mar 63, 1v. (Rept. no. BR-2311)
(Contract AF 33(657)9241)
Unclassified report

DESCRIPTORS: *Radar navigation, *Doppler systems, *Doppler navigation, Velocity, Radio transmitters, Frequency modulation, Digital computers, Mathematical analysis, Flight testing, Aerospace craft, Errors, Navigation, Radar.

Division 20 - NUCLEAR PHYSICS AND NUCLEAR CHEMISTRY
Division 21 - NUCLEAR PROPULSION

20. NUCLEAR PHYSICS AND NUCLEAR CHEMISTRY

AD-298 152 Div. 20
(TISTP/FR) OTS price $5.60

RCA Defense Electronic Products, Camden, N. J.
PRODUCTION ENGINEERING AND PROTOTYPE MANUFACTURE OF THE AERIAL SURVEY METER CD V-781AX.
Final rept.,
by D. A. Coleman. 21 Jan 63, 1v.
(Contract OCD-OS-62-167)
Unclassified report

DESCRIPTORS: *Radiation measurement systems, Geiger counters, Indicator lights, Ammeters, Simulation, Airborne.

AD-298 239 Div. 20
(TISTW/PCR) OTS price $9.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
CHARGED-PARTICLE ACCELERATORS,
by B. S. Ratner. 8 Feb 63, 114p. (Trans. no. FTD-TT-62-957 from Gosudarstvennoye Izdatel'stov Fiziko-Matematicheskoy Literatury, Moskva, pp. 1-112, 1960)
Unclassified report

DESCRIPTORS: *Particle accelerators, Cyclotrons, Synchrocyclotrons, Synchrotrons, Linear accelerators, Proton accelerators, Nuclear reactions, Specifications.

AD-298 615 Div. 20
(TISTP/JW) OTS price $1.60

Theoretical Chemistry Inst., U. of Wisconsin, Madison.
THE HYPERVIRIAL THEOREM FOR COLLISIONS BETWEEN ELECTRONS AND ATOMS,
by Michael B. McElroy and Joseph O. Hirschfelder.
8 Mar 63, 17p.
(Contract AF 33(657)7311; Grant NsG-275-62(4180))
Unclassified report

DESCRIPTORS: *Electron bombardment, *Atoms, Elasticity, Scattering.

AD-298 698 Div. 20, 8
(TISTW/PCR) OTS price $9.60

Research Lab. of Electronics, Mass. Inst. of Tech., Cambridge.
INVESTIGATION OF ELECTRON-BEAM INTERACTION WITH A BEAM-GENERATED PLASMA.
Doctoral thesis,
by Ward D. Getty. 19 Jan 63, 110p. (Technical rept. no. 407)
(Contract DA 36-039-sc-78108)
Unclassified report

DESCRIPTORS: *Plasma physics, *Plasma oscillations, *Electron beams, Theory, Microwaves, Magnetic fields, Test equipment, Circuits, Resonance, Design, Scattering, Light, Mathematical analysis, Equations, Beams (Electromagnetic), Ultrahigh frequency.

AD-298 952 Div. 20
(TISTP/FR) OTS price $2.60

Air Force Cambridge Research Labs., Bedford, Mass.
PROPORTIONAL COUNTER SPECTROMETER FOR SOLAR X RAYS BETWEEN 1 AND 10 ANGSTROMS,
by Leon Heroux, James E. Manson, and Roger Smith.
Dec 62, 20p. (Rept. no. AFCRL-62-1105; Instrumentation for Geophysics and Astrophysics rept. no. 23)
(Proj. 6688)
Unclassified report

DESCRIPTORS: *Radiation measurement systems, X rays, Sun, Pulse height analyzers.

AD-299 028 Div. 20
(TISTP/JW) OTS price $1.10

Duke U., Durham, N. C.
INELASTIC SCATTERING OF 6 MEV NEUTRONS AND THE COMPETITION BETWEEN DIRECT INTERACTION AND COMPOUND NUCLEUS FORMATION,
by R. M. Wilenzick, K. K. Seth and others.
1962, 4p.
(Grant Nonr(G)00069-62)
Unclassified report

DESCRIPTORS: *Neutron scattering, Nuclear models, Nuclei, Nuclear physics, Carbon, Measurement, Elasticity.

AD-299 092 Div. 20
(TISTP/JW) OTS price $1.60

Aerospace Information Div., Washington, D. C.
SOVIET NUCLEAR INSTRUMENTATION AND CONTROL FOR PROPULSION.
Final rept.
8 Mar 63, 15p. (AID rept. no. P-63-31; Series rept. no. 11)
Unclassified report

DESCRIPTORS: *Nuclear propulsion, Control systems, Electronic equipment, Detection, Instrumentation.

AD-299 108 Div. 20
(TISTP/WH) OTS price $1.60

Michigan U., Ann Arbor.
EVIDENCE FOR THE REACTION $\pi^- + p \rightarrow n + n$ AND SOME METHODS OF INVESTIGATING VIRTUAL NUCLEON EXCHANGE PROCESSES,
by C. C. Ting, L. W. Jones, and M. L. Perl.
Mar 63, 1v. (Technical rept. no. 9)
(Contract 1223(24))
Unclassified report

DESCRIPTORS: *Elastic scattering, *Pions, *Proton scattering, *Nuclear cross sections, *Deuterons.

AD-299 189 Div. 20, 13
(TISTW/RD) OTS price $.50

Defense Documentation Center, Arlington, Va.
PROTECTIVE CONSTRUCTION (SUPPLEMENT),
comp. by Reynold Dreyer. Mar 63, 1v. 29 refs.
(Supplement no. 1 to AD-242 653)
Unclassified report

DESCRIPTORS: *Nuclear explosions, *Shelters, *Protective coverings, Structures, Cratering, Blast, Shock waves, Soils, Air blast, Underground structures.

21. NUCLEAR PROPULSION

No Entries

22. ORDNANCE

AD-298 171 Div. 22, 28
(TISTB/AW) OTS price $1.60

Army Ordnance Arsenal, Philadelphia, Pa.
HUMAN FACTORS EVALUATION OF FUZE SETTING FOR FUZE, MTSQ, T197E2,
by E. J. McGuigan. Feb 63, 13p. (Memo. rept. no. M63-24-1)
(DA Proj. 505-02-022)
Unclassified report

DESCRIPTORS: *Fuze setters, Errors, Design, Human engineering.

AD-298 257 Div. 22
(TISTP/MB) OTS price $2.60

High Velocity Lab., Utah U., Salt Lake City.
PERFORATION OF MULTI-LAYER PLATES.
Quarterly program progress rept., 1 Oct-31 Dec 62,
by E. P. Palmer. 31 Dec 62, 26p.
(Contract AF 04(694)259)
Unclassified report

DESCRIP/ORS: *Metal plates, Hypervelocity projectiles, Impact shock, Targets, Explosion effects, Shock waves, Energy, Ammunition damage.

AD-298 598 Div. 22
(TISTW/RD) OTS price $7.60

Army Ordnance Arsenal, Philadelphia, Pa.
FIELD TEST OF A TANK-MOUNTED ENGINEERING LASH UP OF A DAYLIGHT ELECTROVISUAL SIGHTING SYSTEM,
by S. M. Sorin. Oct 62, 68p. (Test rept. no. T63-4-1)
(DA Proj. 5W13-02-062)
Unclassified report

DESCRIPTORS: *Fire control systems, *Tanks (Combat vehicles), *Gun sights, Detection, Tests, Target recognition, Surface targets, Cargo vehicles, Moving target indicators, Personnel, Identification, Passenger vehicles, Armored vehicles, Visibility.

AD-298 783 Div. 22
(TISTW/RD) OTS price $1.60

Hayes Corp., Birmingham, Ala.
STUDY OF TARGET PENETRATION PREDICTION BY HIGH SPEED AND ULTRA HIGH SPEED BALLISTIC IMPACT.
Quarterly rept. no. 5, 1 July-30 Sep 62.
Mar 63, 13p.
(Contract AF 08(635)2155)
(APGC TDR 63-16) Unclassified report

DESCRIPTORS: *Hypervelocity projectiles, *Penetration, Cratering, Impact computers, Digital computers, Terminal ballistics, Statistical analysis, Mathematical prediction.

AD-298 943 Div. 22, 23
(TISTW/PCR) OTS price $3.60

Ammunition Group, Picatinny Arsenal, Dover, N. J.
MALFUNCTION INVESTIGATION OF SIMULATOR, PROJECTILE, GROUND BURST, M115E2,
by Benjamin Kroll and Richard F. Muller. Feb 63, 1v. (Technical rept. no. 3029)
Unclassified report

DESCRIPTORS: *Simulation, *Projectiles, Failure (Mechanics), Design, Tests, Training devices, Military training.

AD-298 967 Div. 22
(TISTP/FR) OTS price $7.60

RAND Corp., Santa Monica, Calif.
CALCULATIONS OF THE BLAST AND CLOSE-IN ELASTIC RESPONSE OF THE CAVITY EXPLOSIONS IN THE COWBOY PROGRAM,
by H. L. Brode and B. R. Parkin. Feb 63, 74p. (Rept. no. P-2644)
Unclassified report

DESCRIPTORS: *Underground explosions, Pressure, Mechanical waves, Hydrodynamics, Particles, Velocity.

AD-299 253 Div. 22
(TISTW/JEA) OTS price $10.10

Air Force Cambridge Research Labs., Bedford, Mass.
A BIBLIOGRAPHY OF THE ELECTRICALLY EXPLODED CONDUCTOR PHENOMENON,
by William G. Chace and Eleanor M. Watson. Oct 62, 115p. (Rept. no. AFCRL-62-1053)
(Proj. 8608)
Unclassified report

DESCRIPTORS: *Explosives initiators, *Bibliographies, Electric currents, Mathematical analysis, Measurements, Photography, Resistance (Electrical), Mirrors, Shock waves, Sparks, Electric switches, Temperature, Theory, X rays, Foils, Films, Plasma physics, Spectrum analyzers, Spectroscopy, Electric wire.

AD-299 306 Div. 22
(TISTW/PCR) OTS price $3.60

Pitman-Dunn Labs. Group, Frankford Arsenal, Philadelphia, Pa.
DETERMINATION OF TEMPERATURE-TIME LIMITS FOR SAFE OPERATION OF 20 mm AMMUNITION,
by M. E. Levy and E. F. VanArtsdalen. Nov 62, 37p. (Rept. no. R-1659)
Unclassified report

DESCRIPTORS: *Aircraft ammunition, *Ammunition propellants, Temperature, Chemical analysis, Microstructure, Tests, Test methods, Tables, Photographs, Cartridges, Ballistics, Effectiveness.

23. PERSONNEL AND TRAINING

AD-298 711 Div. 23, 32
(TISTB/LMH) OTS price $6.60

System Development Corp., Santa Monica, Calif.
THE APPLICATION OF PROGRAMMED INSTRUCTION AND AUTO-INSTRUCTIONAL DEVICES IN COLLEGES AND THEIR RELATION TO A THEORY OF INSTRUCTION,
by David G. Ryans. 26 Feb 63, 61p. (Rept. no. SP-1084/000/01)
Unclassified report

Paper presented at the National Education Association, 18th National Conference on Higher Education, 5 Mar 1963, Chicago, Illinois.

DESCRIPTORS: *Teaching machines, *Education, Instructors, Programming (Computers), Learning, Training, Automation, Attitudes, Behavior, Theory.

Division 24 - PHOTOGRAPHY AND OTHER REPRODUCTION PROCESSES

AD-298 766 Div. 23
(TISTB/LMH) OTS price $.75

Behavoral Sciences Lab., Aerospace Medical Div., Wright-Patterson Air Force Base, Ohio.
PRELIMINARY COST COMPARISON OF TECHNICAL TRAINING BY CONVENTIONAL AND PROGRAMMED LEARNING METHODS. Final rept., Dec 59-Aug 61 on Automated Training Materials,
by Felix F. Kopstein and Richard T. Cave.
July 62, 19p.
(Contract AF 33(616)6983, Proj. 1711)
(MRL TDR 62-79) Unclassified report

DESCRIPTORS: *Training devices, *Training, Programming (Computers), Learning, Automation, Aviation personnel, Economics, Costs.

AD-299 244 Div. 23
(TISTB/AW) OTS price $7.60

University of Southern Calif., Los Angeles.
COMPUTER PERSONNEL SELECTION AND CRITERION DEVELOPMENT: I. THE RESEARCH PLANS,
by Joseph W. Rigney, Raymond M. Berger, and Arthur Gershon. Feb 63, 66p. (Technical rept. no. 36)
(Contract Nonr-22822, Proj. NR 153-093)
Unclassified report

DESCRIPTORS: *Operators (Personnel), *Job analysis, Selection, Classification, Military requirements, Psychometrics, Aptitude tests, Computers, Programming (Computers).

24. PHOTOGRAPHY AND OTHER REPRODUCTION PROCESSES

AD-299 133 Div. 24, 2, 18
(TISTA/VGW) OTS price $5.60

Cornell Aeronautical Lab. Inc., Buffalo, N. Y.
A STUDY OF AERIAL PHOTOGRAPHIC CONTRAST ATTENUATION BY THE ATMOSPHERE.
Interim rept. on Project Photorek III,
by M. J. Mazurowski. 2 Jan 63, 45p. (Technical note no. 2; CAL rept. no. VF-1682-G-2, vol. I of II)
(Contract AF 33(657)8993, Proj. no. 6620)
Unclassified report

DESCRIPTORS: *Aerial photography, *Photographic images, *Atmosphere, Photographic filters, Haze, Visibility, Illumination, High altitude, Attenuation, Photo interpretability, Attenuation, Resolution, Optical properties.

AD-299 277 Div. 24, 2
(TISTA/VGW) OTS price $5.60

General Precision Lab., Inc., Pleasantville, N. Y.
AUTOMATIC STEREO PERCEPTION OF AERIAL PHOTOGRAPHY BY MEANS OF OPTICAL CORRELATION.
Interim technical rept. no. 2, 1 June-31 Aug 62,
by L. I. Goldfischer, S. Belchis, and R. Vesper.
Oct 62, 51p. (GPL rept. no. A27-2)
(Contract DA 44-009-eng-4966)
Unclassified report

DESCRIPTORS: *Aerial photography, Simulation, Terrain models, Surface targets, Correlation techniques, Automatic, Photogrammetry, Photographic film, Resolution, Mapping, Instrumentation, Stereoscopic display systems.

AD-299 285 Div. 24
(TISTP/FR) OTS price $1.60

Ballistic Research Labs., Aberdeen Proving Ground, Md.
CODED SEQUENCE SHUTTER,
by Charles W. Lyle. Dec 62, 20p. (BRL technical note no. 1483)
Unclassified report

DESCRIPTORS: *Camera shutters, Ballistic cameras, Electric motors, Gears, Coding.

25. PHYSICS

AD-298 151 Div. 25
(TISTP/WH) OTS price $3.60

White Sands Missile Range, N. Mex.
PURE ROTATIONAL SPECTRUM OF WATER VAPOR, I. TABLE OF LINE PARAMETERS,
by W. Yunker and C. Querfeld. Feb 63, 38p. (Rept. no. ERDA-2)
(DA Proj. 3A99-06-001-05)
Unclassified report

DESCRIPTORS: *Molecular spectroscopy, *Water vapor, *Molecular rotation, Tables.

AD-298 215 Div. 25, 4
(TISTM/ODN) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
A STUDY OF CONFORMATIONAL CHANGES IN MACROMOLECULES IN SOLUTIONS. III. CONFORMATIONAL CHANGES IN 2-VINYLPYRIDINE-METHACRYLIC ACID COPOLYMER,
by I. T. Slyusarov and S. S. Urazovskiy, 14 Jan 63, 10p. (Trans. no. FTD-TT-62-1572/1+2+4 from Vysokomolekulyarnyye Soyedineniya, no. 4, pp. 481-485, 1962)
Unclassified report

DESCRIPTORS: *Polymers, *Organic compounds, Copolymerization, Viscosity, Electrical conductance, Water, pH, Temperature, Solutions, Organic compounds (others).

AD-298 225 Div. 25
(TISTP/MH) OTS price $2.60

Polacoat, Inc., Blue Ash, Ohio.
DEVELOPMENT OF A MEANS TO PROVIDE PROTECTION FOR THE EYES AGAINST THE DAZZLE EFFECTS OF NUCLEAR DETONATIONS.
Quarterly rept. no. 4, 30 Sep-30 Dec 60, Jan 61, 22p. incl. illus. tables, 6 refs.
(Contract DA 19-129-qm-1534)
Unclassified report

DESCRIPTORS: *Optical filters, *Ultraviolet filters, Nuclear explosions, Radiation hazards, Gels, Attenuation.

The formulation of a phototropic-thermotropic system incorporated into a rigid gel media, which is capable of producing an optical density of 4 and returning to its original transparent state in approximately 20 minutes is described. The formulation of a thin, expedient, relatively inexpensive, ''one-way'', throw-away type phototropic-thermotropic protective device is also described. The attenuation of both ultraviolet and visible radiation by the atmosphere and its effect on phototropic systems is discussed. (Author)

AD-298 230 Div. 25, 15
(TISTP/MH) OTS price $2.60

Miami U., Coral Gables, Fla.
RELATIVISTIC PLASMA IN A MAGNETIC FIELD,
by Behram Kursunoglu. 1963, 26p. incl. illus. 3 refs. (Plasma Physics Bulletin Vol. 2)
(Contract AF 19(604)8082)
Unclassified report

DESCRIPTORS: *Plasma oscillations, *Propagation, *Electromagnetic waves, *Magnetic fields, Mathematical analysis, Integral transforms, Matrix calculus.

Transverse and longitudinal oscillations of a low-density relativistic plasma in the presence of a constant magnetic field are considered by neglecting the collisions. The most general form of the relativistic dispersion relations for linear plasma oscillations are derived and the two extreme cases of zero and infinite equilibrium temperatures are discussed. (Author)

AD-298 270 Div. 25
(TISTP/MB) OTS price $1.60

New York U., N. Y.
DETERMINATION OF FORMATIVE TIME LAGS IN AIR IN A UNIFORM FIELD AS A FUNCTION OF PRESSURE AND ELECTRODE SEPARATION AND DETERMINATION OF FORMATIVE TIME LAGS OF THE VACUUM SPARK.
Final rept., 1 Nov-31 Dec 62, 12 Mar 63, 12p.
(Contract Nonr-28534, Proj. NR 372-141)
Unclassified report

DESCRIPTORS: *Electrical corona, *Glow discharges, Gas discharges, Argon, Hydrogen, Oxygen, Nitrogen, Gas ionization, Electrons, Sparks, Field emission, Electrodes, Experimental data.

AD-298 277 Div. 25
(TISTA/GEC) OTS price $1.60

RAND Corp., Santa Monica, Calif.
A TYPE OF INSTABILITY OF AN INTEGRO-DIFFERENTIAL EQUATION FOR THE SCATTERING FUNCTION IN RADIATIVE TRANSFER,
by T. W. Mullikin. Mar 63, 14p. (Memo. no. RM-3548-PR)
(Contract AF 49(638)700, Proj. RAND)
Unclassified report

DESCRIPTORS: *Thermal radiation, Nonlinear differential equations, Scattering, Heat transfer, Thickness, Nonlinear systems, Numerical analysis, Reflection.

AD-298 299 Div. 25
(TISTP/MH) OTS price $7.60

Chalmers U. of Tech. (Sweden).
DYNAMIC NON-LINEAR WAVE PROPAGATION IN IONIZED MEDIA. SCATTERING OF ELECTROMAGNETIC WAVES BY AN ANISOTROPIC MEDIUM WITH A HARMONICALLY TIME-VARYING DIELECTRIC TENSOR,
by K. H. B. Wilhelmsson. 1962, 62p. (Research rept. no. 32)
(Contract AF 61(052)451)
(AFCRL-62-968) Unclassified report

DESCRIPTORS: *Scattering, *Gas ionization, *Electromagnetic waves, *Plasma physics, *Dielectrics, Microwave frequency, Sidebands, Lasers, Propagation, Reflection, Tensor analysis.

AD-298 307 Div. 25
(TISTB/AW) OTS price $2.60

MITRE Corp., Bedford, Mass.
ELASTIC RAYLEIGH WAVE DISPLACEMENTS DUE TO

Division 25 - PHYSICS

NUCLEAR BLASTS,
by M. L. Baron and R. Check. Sep 62, 33p.
(Rept. no. SR-58)
(Contract AF 33(600)39852, Proj. 607)
(ESD TDR 63-208) Unclassified report

DESCRIPTORS: *Nuclear explosions, *Mechanical waves, Attenuation, Solids, Soils, Stresses.

AD-298 341 Div. 25, 4
(TISTM/ODN) OTS price $1.60

Noyes Chemical Lab., U. of Illinois, Urbana.
HIGH RESOLUTION ESR SPECTRA OF PHOTOCHEMICALLY GENERATED FREE RADICALS: THE VIOLOGENS,
by C. S. Johnson, Jr. and H. S. Gutowsky.
1 Feb 63, 14p. incl. illus. 16 refs. (Technical rept. no. 59)
(Contract Nonr-183414, Proj. NR 051-215)
Unclassified report

Prepared for publication in the Jnl. of Chemical Physics.

DESCRIPTORS: *Free radicals, Spin, Electrons, Hyperfine structure, Water, Solutions, Spectrum analyzers, Ions, Photochemistry, Light, Resonance.

High-resolution, electron-spin resonance spectra were obtained for free radicals produced from methyl, ethyl, and benzyl viologen and 4-4' bipyridyl in ethanol-water solutions by irradiation with sunlight. From the analysis of these spectra it was found that the hyperfine splittings for the protons ortho and meta to the nitrogen atoms are almost equal. The spin density distributions are discussed in terms of McLachlan's approximate SCF theory. (Author)

AD-298 551 Div. 25, 4
(TISTP/JW) OTS price $5.60

Arnold Engineering Development Center, Arnold Air Force Station, Tenn.
CRYOPUMPING CHARACTERISTICS OF SHIELDED LOW TEMPERATURE SURFACES,
by W. G. Kirby. Mar 63, 47p. (Rept. no. AEDC TDR 63-28)
(Contract AF 40(600)1000, Proj. 7778)
Unclassified report

DESCRIPTORS: *Cryogenics, *Fluid flow, Gases, Oxygen, Nitrogen, Shielding, Surfaces, Pumps, Low-temperature research.

AD-298 589 Div. 25
(TISTM/AM) OTS price $1.10

Aerospace Information Div., Washington, D. C.
HEAT TRANSFER IN THE REGION OF THERMAL STABILIZATION FOR LIQUID METALS FLOWING TURBULENTLY IN A TUBE,
by V. I. Subbotin, M. Kh. Ibragimov, and Ye. V. Nomofilov. 1 Mar 63, 10p. (AID rept. no. T-63-22; Trans. from Teplootdacha na uchastke teplovoy stabilizatsii pri turbulentnom techenii zhidkikh metallov v trube. Atomnaya energiya, 13:2, pp. 155-161, Aug 62)
Unclassified report

DESCRIPTORS: *Liquid metals, *Heat transfer, Fluid flow, Lead alloy, Bismuth alloy, Experimental data, Theory, Statistical analysis, Turbulence, Reynolds number.

AD-298 620 Div. 25, 9
(TISTP/JW) OTS price $8.60

Aerospace Corp., Los Angeles, Calif.
THE DYNAMIC STABILITY OF ELASTIC SYSTEMS. VOLUME III,
by V. V. Bolotin, tr. by V. I. Weingarten and others. 1 Feb 63, 87p. (Rept. no. TDR-169(3560-30)TR-2)
(Contract AF 04(695)169)
(SSD TDR 62-154, vol. 3) Unclassified report

DESCRIPTORS: *Elasticity, *Resonance, Excitation, Vibration, Structural properties, Stability.

AD-298 626 Div. 25
(TISTP/JW) OTS price $1.60

Hebrew U. (Israel).
THE GROUND STATE SPLITTING AND OPTICAL SPECTRA OF d TO THE 5TH POWER CONFIGURATION IN CUBIC CRYSTALLINE FIELDS,
by W. Low and G. Rosengarten. Sep 62, 12p.
(Technical note no. 3)
(Contract AF 61(052)549)
(AFCRL 63-227) Unclassified report

DESCRIPTORS: *Optical phenomena, Crystal structure, Spin, Spectrum analyzers.

AD-298 642 Div. 25
(TISTP/JW) OTS price $1.10

Institute of Mathematical Sciences, New York U., N. Y.
MAGNETOHYDRODYNAMICS.
Final rept., 30 Nov 59-1 Dec 62.
Dec 62, 7p. (Research rept. no. MH-14)
(Contract AF 19(604)6144, Proj. 8600)
(AFCRL 63-204) Unclassified report

DESCRIPTORS: *Magnetohydrodynamics, Ionization, Charged particles, Motion, Fluid flow.

AD-298 643 Div. 25
(TISTP/JW) OTS price $1.60

Institute of Mathematical Sciences, New York U., N. Y.
ANALYSIS OF THE TRANSITION REGION BETWEEN A UNIFORM PLASMA AND ITS CONFINING MAGNETIC FIELD: II,
by James Hurley. Dec 62, 16p. (Research rept. no. MH-13)
(Contract AF 19(604)6144, Proj. 8600)
(AFCRL 62-1125) Unclassified report

DESCRIPTORS: *Plasma physics, Boundary layer transitions, Magnetic fields, Motion, Particles, Analysis.

AD-298 648 Div. 25
(TISTP/JW) OTS price $1.10

Weizmann Inst. (Israel).
THE STRENGTH OF THE NU SUB 3 VIBRATION OF H2O,
by J. H. Jaffe and W. S. Benedict. Oct 62, 3p.
(Technical (Scientific) Note no. 3)
(Contract AF 61(052)388)
(AFCRL 63-232) Unclassified report

DESCRIPTORS: *Water, Absorption, Emissivity, Vibration.

AD-298 652 Div. 25
(TISTP/WH) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
HEAT TRANSFER IN A TURBULENT FLUID FLOW AT LARGE PRANDTL NUMBERS AND VARIABLE VISCOSITY,
by Ts'ai K'uo-en. 14 Feb 63, 10p. (Trans. no. FTD-TT-62-1890 from Inzhenerno-fizicheskiy Zhurnal, 5:8, pp. 10-16, 1962)
Unclassified report

DESCRIPTORS: *Heat transfer, *Turbulence, *Fluid dynamic properties, *Viscosity.

AD-298 654 Div. 25
(TISTE/OHD) OTS price $1.10

Foreign Technology Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
THE MECHANISM OF ELECTRICAL BREAKDOWN OF SOLID DIELECTRICS IN A THIN LAYER,
by A. A. Vorob'yev, G. A. Vorob'yev and V. A. Kostrygin. 14 Feb 62, 4p. (Trans. no. FTD-TT-62-1927 from Izvestiya Akademiya Nauk, Otdeleniye Tekhnicheskikh Nauk, Energetika i Avtomatika 4:pp. 66-68, 1962)
Unclassified report

DESCRIPTORS: *Electric discharges, Crystals, Sodium compounds, Potassium compounds, Chlorides, Bromides, Solid state physics, Dielectric films.

AD-298 666 Div. 25, 8
(TISTE/CAM) OTS price $1.60

Thermo Electron Engineering Corp., Waltham, Mass.
ADDITIVE CONVERTER STUDIES.
Quarterly rept. no. 1,
by A. L. Hyland. Mar 63, 14p. (Rept. no. 20-63)
(Contract AF 33(657)10130)
Unclassified report

DESCRIPTORS: *Thermionic converters, *Energy conversion, *Thermionic emission, *Thermoelectricity, Design, Diodes (Semiconductor), Electrodes, Electron bombardment, Effectiveness, Surfaces, Test equipment, Oxygen, Fluorine, Cesium, Chlorine, Corrosion, Additives.

AD-298 669 Div. 25, 9
(TISTA/FRL) OTS price $2.60

Institute of Mathematical Sciences, New York U., N. Y.
OBLIQUE SHOCK WAVES IN STEADY TWO-DIMENSIONAL HYDROMAGNETIC FLOW,
by Jack Bazer and W. B. Ericson. Dec 62, 1v. (Research rept. no. MH-12)
(Contract AF 19(604)6144)
(AFCRL 62-1124) Unclassified report

Presented at the Symposium on Electromagnetics and Fluid Dynamics of Gaseous Plasma, Polytechnic Inst. of Brooklyn, April 4-6, 1961.

DESCRIPTORS: *Magnetohydrodynamics, *Shock waves, Gas flow, Thermodynamics, Stability, Partial differential equations, Electromagnetism, Electromagnetic properties, Plasma physics, Symposia.

AD-298 704 Div. 25, 6
(TISTP/MB) OTS price $8.10

Dayton U., Research Inst., Ohio.
MEASUREMENTS OF THE OPTICAL REFLECTION POWER FROM STANDARD GEOMETRICAL BODIES AND SURFACES INTO AN ANGLE OF 90 DEGREES TO SIMULATE SOLAR IRRADIATION.
Quarterly progress rept. no. 1, 1 Oct-31 Dec 62,
by Werner Rambauske and R. Michael Hord.
31 Dec 62, 80p.
(Contract AF 33(657)9014)
Unclassified report

DESCRIPTORS: *Geometric forms, *Solar radiation, Surfaces, Optics, Optical properties, Reflection, Optical equipment, Radar equipment, Simulation, Photomultipliers, Measurement.

AD-298 722 Div. 25
(TISTP/TL) OTS price $3.60

Oxford U. (Gt. Brit.).
INVESTIGATION INTO THE ORIGIN OF CRYSTALLINE ELECTRIC FIELD EFFECTS ON RARE EARTH IONS. I. CONTRIBUTION FROM NEIGHBOURING INDUCED MOMENTS,
by M. T. Hutchings and D. K. Ray. Aug 62, 24p. illus. tables. (Technical note no. 12)
(Contract AF 61(052)125)
(AFCRL-62-945) Unclassified report

DESCRIPTORS: *Rare earth elements, Praseodymium, Chlorides, Bromides, Nuclear moments, Electric fields, Electric potential, Nuclear energy levels, Crystals, Ions.

AD-298 726 Div. 25
(TISTW/PCR) OTS price $1.10

Quantum Electronics Lab., Calif. Inst. of Tech., Pasadena.
LIGHT SCATTERING FROM DIELECTRIC FILM LASER MIRRORS,
by Walter A. Specht, Jr. 1 Sep 62, 6p. (Scientific rept. no. 1)
(Contract AF 19(604)8052, Proj. 4600)
(AFCRL 62-747) Unclassified report

DESCRIPTORS: *Light, *Lasers, *Dielectric films, Absorption, Gases, Neon, Helium, Monochromatic light, Scattering, Mirrors.

AD-298 728 Div. 25, 4
(TISTP/MB) OTS price $1.10

Weizmann Inst. (Israel).
PRESSURE INDUCED SHIFTS OF INFRARED LINES DUE TO POLAR MOLECULES,
by Earle K. Plyler, M. A. Hirshfeld, and J. H. Jaffe. Oct 62, 5p. (Technical scientific note no. 2)
(Contract AF 61(052)388)
(AFCRL-63-231) Unclassified report

DESCRIPTORS: *Infrared spectroscopy, Spectra (Infrared), Hydrochloric acid, Gases, Helium group gases, Molecules, Quantum mechanics, Pressure.

AD-298 729 Div. 25
(TISTP/MH) OTS price $1.60

Air Force Cambridge Research Labs., Bedford, Mass.
RESULTS FROM THE CONSERVATION LAWS FOR MAGNETOHYDRODYNAMIC FLOW,
by G. L. Hand. Dec 62, 15p. (Rept. no. AFCRL-62-1112)
(Proj. 8608)
Unclassified report

DESCRIPTORS: *Plasma physics, *Electrical conductance, *Magnetic fields, Tensor analysis, Partial differential equations, Magnetohydrodynamics, Fluids.

Division 25 - PHYSICS

AD-298 730 Div. 25, 4, 9
(TISTM/AMS) OTS price $2.60

Air Force Cambridge Research Labs., Bedford, Mass.
COMPUTER SOLUTION OF SIMULTANEOUS DIFFUSION - CHEMICAL KINETICS EQUATIONS RELATING TO UPPER ATMOSPHERE RELEASES,
by D. Golomb and J. Mason. Dec 62, 21p. (Rept. no. AFCRL-62-1132)
Unclassified report

DESCRIPTORS: *Upper atmosphere, *Dynamics, Programming (Computers), Analog systems, Models (Simulations), Atmospheric motion, Numerical methods and procedures, Mathematical analysis, Partial differential equations, Diffusion, Data, Statistical processes, Chemical reactions, Reaction kinetics, Kinetic theory, Clouds, Markers.

AD-298 734 Div. 25
(TISTP/MB) OTS price $14.50

Naval Ordnance Lab., White Oak, Md.
ELEMENTARY THEORY OF THE OPTICAL PROPERTIES OF SOLIDS,
by Frank Stern, Ralph F. Guertin, and Robert E. Morrison. 23 July 62, 1v. (Rept. no. NOLTR 62-66)
Unclassified report

DESCRIPTORS: *Solids, Crystals, Ions, Metals, Semiconductors, Optics, Solid state physics, Gases, Dielectric properties, Optical properties.

AD-298 739 Div. 25
(TISTP/MH) OTS price $2.60

Clarendon Lab., U. of Oxford (Gt. Brit.).
THE RAISING OF ANGULAR MOMENTUM DEGENERACY OF F-ELECTRON TERMS BY CUBIC CRYSTAL FIELDS,
by K. R. Lea, M. J. M. Leask, and W. P. Wolf. Jan 62, 1v. (Technical note no. 11)
(Contract AF 61(052)125)
(AFCRL-62-929) Unclassified report

DESCRIPTORS: *Crystal lattices, *Ions, *Electrostatic fields, *Rare earths, Quantum mechanics, Matrix algebra, Magnetic properties.

AD-298 751 Div. 25
(TISTP/MB) OTS price $3.60

Rome Air Development Center, Griffiss Air Force Base, N. Y.
TEMPORAL PROFILES OF CONDUCTIVITY IN THE ELECTRIC SHOCK TUBE,
by Thaddeus Baynard Welch, Jr. Jan 63, 26p. (Technical rept. no. RADC-TDR-63-18)
(Proj. no. 5579)
Unclassified report

DESCRIPTORS: *Plasma physics, Shock tubes, Gas ionization, Gas discharges, Helium, Argon, Microwaves.

AD-298 770 Div. 25
(TISTW/RD) OTS price $8.10

Cornell U., Ithaca, N. Y.
THERMODYNAMIC BEHAVIOUR OF THE HEISENBERG FERROMAGNET,
by R. B. Stinchcombs, G. Horwitz and others. Sep 62, 65p. illus.
Unclassified report

DESCRIPTORS: *Ferromagnetism, Integral transforms, Spin, Nuclear spins, Perturbation theory, Thermodynamics, Instrumentation.

AD-298 776 Div. 25, 17
(TISTW/PCR) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
TEMPERATURE DEPENDENCE OF MAGNETOSTRICTION AND COEFFICIENT OF LINEAR EXPANSION OF ELINVAR,
by A. Ya. Vlasov and B. A. Ayurzanayn. 15 Feb 63, 8p. (Trans. no. FTD-TT-63-7 from Izvestiya Sibirskoyo Otdeleniya Akademiy Nauk SSSR, no. 6, pp. 99-102, 1962)
Unclassified report

DESCRIPTORS: *Magnetostriction, Temperature, Nickel alloys, Chromium alloys, Iron alloys, Tests, Test methods, Alloys.

AD-298 795 Div. 25
(TISTA/FRL) OTS price $2.60

Space Technology Labs., Inc., Los Angeles, Calif.
APPROXIMATE INFLUENCE COEFFICIENTS OF CANTILEVERED STIFFENED THIN-WALLED CONICAL FRUSTUMS UNDER END LOAD,
by Ralph E. Hubka. 7 Jan 63, 15p. (Rept. no. EM13-1; Rept. no. 6110-7936-KU-000)
(Contract AF 04(694)1)
(BSD TDR 63-14) Unclassified report

DESCRIPTORS: *Conical bodies, Cylindrical bodies, Stiffened cylinders, Theory, Differential equations, Integral equations, Compressive properties, Tensile properties, Loading (Mechanics), Cantilever beams, Moments, Shear stresses.

AD-298 796 Div. 25
(TISTP/WH) OTS price $2.60

Mathematics Research Center, U. of Wisconsin, Madison.
THE REFRACTION OF A SPHERICAL PULSE AT A PLANE INTERFACE,
by Michael Papadopoulos. Dec 61, 27p. (MRC technical summary rept. no. 279)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Acoustics, *Refraction, Integration, Propagation.

AD-298 802 Div. 25
(TISTA/GEC) OTS price $2.60

Mathematics Research Center, U. of Wisconsin, Madison.
DIFFRACTION OF PLANE ELASTIC WAVES BY A CRACK, WITH APPLICATION TO A PROBLEM OF BRITTLE FRACTURE,
by Michael Papadopoulos. 1962, 25p. (MRC technical summary rept. no. 294)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Fracture (Mechanics), *Wave transmission, *Mechanical waves, Differential equations, Partial differential equations, Theory, Dynamics, Elasticity, Deformation, Diffraction.

AD-298 804 Div. 25
(TISTA/FRL) OTS price $2.60

Mathematics Research Center, U. of Wisconsin, Madison.
CYLINDRICAL AND SPHERICAL SHOCK WAVES IN

MONATOMIC CONDUCTING FLUIDS,
by Roy M. Gundersen. Mar 62, 21p. (MRC technical summary rept. no. 299)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Shock waves, Theory, Ducts, Equations, Motion, Integral equations, Wave transmission, Magnetohydrodynamics.

AD-298 805 Div. 25
(TISTA/FRL) OTS price $1.60

Mathematics Research Center, U. of Wisconsin, Madison.
ELASTIC-PLASTIC TRANSITION IN TORSION,
by B. R. Seth. Mar 62, 13p. (MRC technical rept. no. 302)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Stresses, *Deformation, Shear stresses, Cylindrical bodies, Elasticity, Plasticity, Cold-working, Integral equations, Dynamics, Theory, Torque.

AD-298 809 Div. 25
(TISTP/JW) OTS price $12.50

Aeronautical Research Lab., Office of Aerospace Research, Wright-Patterson Air Force Base, Ohio.
RESEARCH ON THE OSCILLATING-ELECTRON PLASMA SOURCE.
Final rept., 1 July 60-31 Aug 62,
by Jack W. Davis, Albert W. Angelbeck, and Edward A. Pinsley. Dec 62, 159p. (Technical rept. no. ARL 62-471)
(Contract AF 33(616)7448, Proj. no. 7116)
Unclassified report

DESCRIPTORS: *Plasma oscillations, Dynamics, Analysis, Energy, Propulsion, Acceleration, Distribution, Electrons.

AD-298 950 Div. 25
(TISTP/TL) OTS price $2.60

Brown U., Div. of Applied Mathematics, Providence, R. I.
MINIMUM-WEIGHT DESIGN OF BEAMS SUBJECTED TO FIXED AND MOVING LOADS,
by M. Save and W. Prager. Feb 63, 21p. (Technical rept. no. C11-86)
(Contract Nonr-56210, Proj. NR-064-406)
Unclassified report

DESCRIPTORS: *Beams (Structural), Plasticity, Moments, Stresses, Deformation, Defletion, Shear stresses, Design, Load distribution.

AD-298 959 Div. 25, 12
(TISTP/WH) OTS price $2.60

Army Missile Command, Redstone Arsenal, Huntsville, Ala.
DEVELOPMENT OF THE MOMENTS AND MOMENTS OF MOMENTUM FOR THE SIX DEGREES OF FREEDOM OF A RIGID BODY WITH RESPECT TO THE BODY AXES AND EARTH-FIXED AXES,
by Y. Y. Clark. 5 Mar 63, 22p. (Rept. no. RS-TR-62-4)
(DA Proj. 1-B-2-22901-A-206)
Unclassified report

DESCRIPTORS: *Motion, Rotation, Mathematical analysis, Guided missiles, Equations.

AD-298 961 Div. 25, 15
(TISTP/TL) OTS price $4.60

RAND Corp., Santa Monica, Calif.
RADIATIVE TRANSFER IN HOMOGENEOUS ANISOTROPIC SLABS,
by T. W. Mullikin. Mar 63, 39p. (Memo. no. RM-3558-PR)
(Contract AF 49(638)700, Proj. RAND)
Unclassified report

DESCRIPTORS: *Thermal radiation, *Transformations (Mathematics), *Sheets, Anisotropy, Algebra, Equations, Integral equations, Numerical analysis, Heat transfer, Scattering.

AD-298 965 Div. 25
(TISTP/MH) OTS price $5.60

Air Force Cambridge Research Labs., Bedford, Mass.
RADIATION PATTERN OF A SLIT IN A GROUND PLANE COVERED BY A PLASMA LAYER.
Master's thesis,
by Masayuki Omura. Dec 62, 46p. (Rept. no. AFCRL-62-958)
(Proj. no. 4642)
Unclassified report

DESCRIPTORS: *Plasma physics, *Electromagnetic fields, *Polarization, *Models, Integration, Integral transforms, Partial differential equations, Wave transmission, Electric fields, Transmission lines.

AD-298 971 Div. 25
(TISTP/TL) OTS price $3.60

Electronic Defense Lab., Mountain View, Calif.
RADIANCE,
by Fred E. Nicodemus. 19 Oct 62, 28p. (Technical memo. no. EDL-M494)
(Contract DA 36-039-sc-87499)
Unclassified report

DESCRIPTORS: *Optics, *Radiometers, *Light Refractive index, Emissivity, Absorption, Reflection, Optical images, Measurement.

AD-298 995 Div. 25, 15
(TISTP/TL) OTS price $11.00

Stanford Research Inst., Menlo Park, Calif.
TOPOLOGICAL ANALYSIS OF SECTIONALLY UNIFORM AND PARAMETRIC SYSTEMS,
by M. C. Pease and C. W. Barnes. Feb 63, 138p.
(Technical note no. 1)
(Contract AF 33(657)8343)
Unclassified report

DESCRIPTORS: *Topology, *Electron beams, *Coupling circuits, *Parametric amplifiers, Linear systems, Transmission lines, Matrix algebra, Analysis.

AD-298 997 Div. 25
(TISTM/ODN) OTS price $.75

Naval Research Lab., Washington, D. C.
EFFECT OF PRESSURE ON THE THERMAL CONDUCTIVITY OF A GAS,
by C. C. Minter. 20 Feb 63, 21p. (Rept. no. 5907)
Unclassified report

DESCRIPTORS: *Gases, Pressure, Experimental data, Test methods, Measurement, Mixtures, Equations of state, Hydrogen, Deuterium, Carbon dioxide, Argon, Nitrogen, Nitrogen compounds, Oxides, Air, Temperature, Distribution, Theory, Thermodynamics, Thermal conductivity.

Division 25 - PHYSICS

AD-299 004 Div. 25, 7
(TISTE/CAM) OTS price $8.10

Tapco West Coast Engineering Thompson, Ramo Wooldridge Inc., Inglewood, Calif.
LONG-LIFE THERMIONIC CONVERTERS FOR SOLAR POWER SYSTEMS.
Final rept., Mar 61-Oct 62.
Feb 63, 82p.
(Contract AF 33(616)8114, Proj. no. 8173; Sub contract to Thermo Electron Engineering Corp., Cambridge, Mass.)
(ASD-TDR-62-1069) Unclassified report

DESCRIPTORS: *Thermionic converters, *Electric power production, *Thermionic emission, Design, Effectiveness, Temperature, Electric potential, Cesium, Instrumentation, Failure (Mechanics), Space environmental conditions, Test methods, Test facilities, Solar cells, Life expectancy.

AD-299 005 Div. 25
(TISTP/MH) OTS price $1.60

Northwestern U., Evanston, Ill.
THE EVAPORATION MODEL AND THE SHAPE OF THE SPECTRA OF INELASTICALLY SCATTERED NEUTRONS,
by Kamal K. Seth, R. M. Wilenzick and T. A. Griffy. 1962, 13p.
(Grant Nonr-(G)00069-62)
Unclassified report

DESCRIPTORS: *Neutron scattering, *Inelastic scattering, *Energy, *Nuclear physics, *Density, *Spin, Nuclei, Nucleons, Thermodynamics, Neutrons, Distribution, Electrons.

AD-299 007 Div. 25, 30
(TISTW/PCR) OTS price $4.60

American Optical Co., Southbridge, Mass.
STUDY OF OPTICAL FIBER TECHNIQUES FOR DATA PROCESSING.
Final rept.,
by Charles J. Koester. Aug 62, 41p.
(Contract AF 30(602)2440, Proj. no. 5581)
(RADC-TDR-62-478) Unclassified report

DESCRIPTORS: *Fiber optics, *Phosphorescent materials, *Lasers, Computer logic, Computer storage devices, Magneto-optic effect, Infrared optical materials, Diodes, Silicon, Electronic switches, Ruby, Refractive index, Neodymium, Fluorescence, Data processing systems, Data storage systems, Computers.

AD-299 017 Div. 25
(TISTM/AM) OTS price $1.00

Midwest Research Inst., Kansas City, Mo.
STUDY OF ULTRASONIC METHODS FOR NONDESTRUCTIVE MEASUREMENT OF RESIDUAL STRESS.
Final rept., 1 Feb 61-31 Jan 62 on the Chemistry and Physics of Materials,
by Fred R. Rollins, Jr., Donald R. Kobett, and Jerry Lee Jones. Jan 63, 31p.
(Contract AF 33(616)7058, Proj. 7360)
(WADD TR 61-42, pt. 2) Unclassified report

DESCRIPTORS: *Stresses, *Ultrasonic radiation, Single crystals, Aluminum, Steel, Silicon compounds, Oxides, Theory, Vector analysis, Deformation, Solids, Partial differential equations, Isotropism, Integral transforms, Perturbation theory, Operators (Mathematics), Phonons, Quantum mechanics, Functions, Scattering, Mechanical waves, Materials, Nondestructive testing.

AD-299 026 Div. 25
(TISTP/JW) OTS price $3.50

Western Electro-Acoustic Lab., Inc., Los Angeles, Calif.
SUPPRESSION OF JET NOISE WITH EMPHASIS ON THE NEAR FIELD.
Final rept., Dec 60-Jan 62 on Dynamic Problems in Flight Vehicles,
by Kenneth M. Eldred, Robert W. White and others.
Feb 63, 224p.
(Contract AF 33(616)7772, Proj. 1370)
(ASD TDR 62-578) Unclassified report

DESCRIPTORS: *Jet engine noise, Acoustic properties, Power equipment, Generators, Noise, Suppressors.

AD-299 033 Div. 25
(TISTP/JW) OTS price $2.25

Directorate of Engineering Test, Aeronautical Systems Div., Wright-Patterson Air Force Base, Ohio.
ACOUSTIC NOISE AND VIBRATION STUDIES AT CAPE CANAVERAL MISSILE TEST ANNEX. VOLUME II, VIBRATION.
Final rept., 7 July-17 Nov 61,
by Robert P. Boyd. Jan 63, 66p.
(Proj. 1309)
(ASD TR 61-608, vol. 2) Unclassified report

DESCRIPTORS: *Noise, Guided missile launchers, Vibration, Frequency, Measurement, Acoustic properties.

AD-299 050 Div. 25, 6, 8
(TISTW/PCR) OTS price $13.00

Space Technology Labs., Inc., Redondo Beach, Calif.
MASERS AND LASERS: A BIBLIOGRAPHY. 1962 SUPPLEMENT,
by J. F. Price and A. K. Dunlap. Mar 63, 178p.
(Rept. no. 9990-6369-KU-000; Research Bibliography no. 45)
Unclassified report

DESCRIPTORS: *Lasers, *Masers, *Bibliographies.

AD-299 063 Div. 25
(TISTM/AM) OTS price $3.60

TRACOR, Inc., Austin, Tex.
STUDY OF THE OXYGEN ELECTRODE MECHANISM.
Semiannual rept. no. 2, 10 July 62-9 Jan 63,
by Ray M. Hurd and Earl S. Snavely, Jr. 9 Jan 63, 20p. (Rept. no. TRACOR 63-108-U)
(Contract DA 36-039-sc-89159)
Unclassified report

DESCRIPTORS: *Oxygen, *Electrodes, Vapors, Adsorption, Electrolytes, Electrolytic cells, Surface properties, Kinetic theory, Electric potential, Experimental data, Electrodes, Platinum.

AD-299 093 Div. 25
(TISTP/JW) OTS price $1.60

Redstone Scientific Information Center, Redstone Arsenal, Huntsville, Ala.
BENDING OF A PRISMATIC BEAM UNDER CONDITIONS OF

NON-STATIONARY CREEP,
by U. Zhui-Fyn, tr. by Ingeborg V. Baker.
1 Mar 63, 14p. (Rept. no. RSIC-4; Trans. from Dokladi Akademii Nauk Armenian SSSR, 30:3, pp. 139-149, 1960)
Unclassified report

DESCRIPTORS: *Beams (Electromagnetic), Prismatic bodies, Creep, Integral equations, Deformation.

AD-299 094 Div. 25, 4
(TISTM/RGR) OTS price $1.60

Redstone Arsenal, Redstone Scientific Information Center, Ala.
THE VIBRATIONAL SPECTRA OF ETHYLENIMINE AND ITS ALKYL SUBSTITUTES,
by Yu. N. Scheinker, E. M. Peresleni, and G. I. Braz, tr. by Ingeborg V. Baker. 15 Mar 63, 10p. (Rept. no. RSIC-5; from Zhurnal Fizicheskoi Khimii, vol. 29, pp. 518-522, 1955)
Unclassified report

DESCRIPTORS: *Raman spectroscopy, *Spectra (Infrared), *Organic compounds, Purification, Chemical bonds, Organic compounds, others.

AD-299 113 Div. 25, 2
(TISTP/WH) OTS price $3.60

Massachusetts Inst. of Tech., Cambridge.
ON A THEORY OF TURBULENT DIFFUSION,
by J. Chadam. Dec 62, 26p.
(Contract AF 19(604)6181 and Grant NSF-G21515)
(AFCRL 62-1107) Unclassified report

DESCRIPTORS: *Micrometeorology, *Turbulence, *Diffusion, Partial differential equations, Statistical analysis, Kinetic theory.

AD-299 143 Div. 25
(TISTP/JW) OTS price $1.10

Seismological Observatory, John Carrol U., Cleveland, Ohio.
SINGLE-CRYSTAL ELASTIC CONSTANTS OF POTASSIUM,
by W. R. Marquardt, J. Trivisonno, and T. M. Klucher. Feb 63, 4p. 6 refs. (Technical rept. no. 7)
(Contract Nonr 2577(01), Proj. NR-384-309)
Unclassified report

DESCRIPTORS: *Potassium, Elasticity, Measurement, Temperature, Single crystals.

AD-299 146 Div. 25, 4
(TISTM/AMS) OTS price $2.60

Theoretical Chemistry Inst., U. of Wisconsin, Madison.
TRUNCATED REACTION OPERATORS AND THE HELIUM PROBLEM,
by William J. Meath, Kenneth M. Sando and others. 25 Feb 63, 23p. (Rept. no. WIS-TCI-10; Series rept. no. 3)
(Grant NsG 275-62(4180); Contracts AF 33(657)7311 and NOrd-15884)
Unclassified report

DESCRIPTORS: *Atomic energy levels, *Helium, Theory, Chemistry, Configuration, Perturbation theory, Quantum mechanics, Electrons.

AD-299 228 Div. 25
(TISTP/JP) OTS price $2.60

Mathematics Research Center, U. of Wisconsin, Madison.
DIFFRACTION OF PULSES BY A HALF-PLANE. PART 2,
by Michael Papadopoulos. Dec 62, 23p. (MRC technical summary rept. no. 364)
(Contract DA 11-022-ORD-2059)
Unclassified report

DESCRIPTORS: *Diffraction, *Sound, *Electromagnetic pulses, *Sound transmission, Subsonic flow, Supersonic flow, Mathematical analysis.

AD-299 242 Div. 25
(TISTP/JW) OTS price $2.60

Texas Instruments Inc., Dallas.
RESEARCH AND DEVELOPMENT OF YTTRIUM IRON GARNET SINGLE CRYSTALS.
Final engineering rept., 1 Oct-31 Dec 62,
by E. L. Johnson and T. S. Burkhalter. 24 Jan 63,
(Contract NObsr-87241)
Unclassified report

DESCRIPTORS: *Garnet, Yttrium compounds, Iron compounds, Ferromagnetism, Resonance, Single crystals.

AD-299 243 Div. 25
(TISTP/JW) OTS price $2.60

Texas Instruments Inc., Dallas.
RESEARCH AND DEVELOPMENT OF YTTRIUM IRON GARNET SINGLE CRYSTALS.
Quarterly rept., 1 July-30 Sep 62,
by E. L. Johnson and T. S. Burkhalter. 21 Jan 63, 18p.
(Contract NObsr-87241)
Unclassified report

DESCRIPTORS: *Garnet, Yttrium compounds, Iron compounds, Ferromagnetism, Resonance, Single crystals.

AD-299 247 Div. 25
(TISTM/ODN) OTS price $8.60

Institute for the Study of Metals, U. of Chicago, Ill.
LOW TEMPERATURE CALORIMETRY WITH ISOTHERMAL SHIELD AND EVALUATED HEAT LEAK,
by J. W. Stout. 1962, 80p. illus. (Technical rept. no. 10)
(Contract Nonr-212113)
Unclassified report

DESCRIPTORS: *Calorimeters, *Thermodynamics, Specific heat, Energy, Heat, Metals, Cryogenics, Resistance thermometers, Solids, Liquefied gases, Heat transfer, Helium, Design, Calorimeters.

AD-299 276 Div. 25
(TISTP/JW) OTS price $8.60

Motorola, Inc., Phoenix, Ariz.
STUDY OF SELECTED CERAMIC MATERIAL FOR DESIGN AND DEVELOPMENT OF MICROWAVE COMPONENTS.
Final rept.,
by D. E. Allen. Oct 62, 74p. (Rept. no. SSF-2592)
(Contract AF 30(602)2429, Proj. 4506)
(RADC TDR 62-501) Unclassified report

DESCRIPTORS: *Ferroelectric materials, Piezoelectric crystals, Ceramic materials, Ferromagnetic materials, Microwave equipment.

AD-299 281 Div. 25
(TISTP/JP) OTS price $5.60

General Electric Co., Cincinnati, Ohio.
MONTE CARLO COMPUTATIONAL EXPERIMENTS ON SINGLE VACANCY MIGRATION IN CUBIC LATTICES.
Final rept., 15 Mar 62-15 Mar 63 on Characterization of Solid Phase and Interphase Phenomena in Crystalline Substances,
by J. R. Beeler, Jr. Mar 63, 52p.
(Contract AF 33(657)8473, Proj. 7351)
(ASD TDR 63-215) Unclassified report

DESCRIPTORS: *Monte Carlo method, *Diffusion, *Crystal lattices, *Alloys, *Phase studies, *Atoms, Computers, Models (Simulation), Brillouin zones, Crystal lattice defects, Electron transitions, Statistical analysis, Crystal structure.

AD-299 309 Div. 25, 17, 26
(TISTM/ODN) OTS price $2.60

Westinghouse Electric Corp., Philadelphia, Pa.
PRODUCTION ENGINEERING MEASURE TYPE 2N1016B SILICON ALLOY TRANSISTOR.
Quarterly progress rept. no. 2,
by S. Chinowsky, T. Csakvari and others.
31 Dec 62, 24p.
(Contract DA 36-039-sc-86743)
Unclassified report

DESCRIPTORS: *Transistors, *Silicon alloys, *Semiconductor devices, Manufacturing methods, Encapsulation, High-temperature research, Storage, Tests, Materials, Preparation, Plating, Gold, Molybdenum, Soldering alloys, Failure (Mechanics), Reliability.

AD-299 383 Div. 25
(TISTP/TL) OTS price $3.60

Illinois Inst. of Tech., Chicago.
THE CARRYING CAPACITY OF CONICAL SHELLS UNDER CONCENTRATED AND DISTRIBUTED LOADS,
by Philip G. Hodge, Jr. and John A. DeRuntz, Jr.
Feb 63, 34p. illus. (DOMIIT rept. no. 1-22)
(Contract Nonr-140604, Proj. NR 064 429)
Unclassified report

DESCRIPTORS: *Structural shells, *Conical bodies, Shear stresses, Loading (Mechanics), Deformation, Elasticity, Plasticity, Stresses, Load distribution.

26. PRODUCTION AND MANAGEMENT

AD-298 150 Div. 26, 15
(TISTP/WH) OTS price $3.60

Thomas J. Watson Research Center, Yorktown Heights, N. Y.
THE THEORY OF BIDDING III,
by James H. Griesmer and Martin Shubik.
29 Jan 63, 33p. (Research rept. no. RC-874)
(Contract Nonr-377500, Proj. NR 047 040)
Unclassified report

DESCRIPTORS: *Game theory, *Costs, *Operations research, Economics.

AD-298 274 Div. 26
(TISTB/AW) OTS price $2.60

RAND Corp., Santa Monica, Calif.
SHOULD WE MAKE THE GOVERNMENT MORE BUSINESSLIKE,
by P. R. McClenon. Jan 63, 19p. (Rept. no. P-2695)
Unclassified report

DESCRIPTORS: *Management engineering, *United States government, Department of Defense, Federal budgets, Economics, Analysis, Costs, Effectiveness, Wages, Employee relations.

AD-298 303 Div. 26, 15
(TISTP/WH) OTS price $3.60

Northwestern Technological Inst., Evanston, Ill.
FURTHER EXPLORATIONS IN THE THEORY OF MULTIPLE BUDGETED GOALS,
by A. Charnes and A. Stedry. Feb 63, 31p. (ONR research memo. no. 62)
(Contract Nonr-122810, Proj. NR 047 021)
Unclassified report

DESCRIPTORS: *Probability, *Management engineering, *Behavior, *Game theory.

AD-298 558 Div. 26, 14
(TISTM/BRW) OTS price $2.60

Watervliet Arsenal, N. Y.
ECONOMIC EVALUATION OF SEVERAL MONOLITHIC SHELL PROCESSES,
by F. A. Heiser and D. M. Feeney. Oct 62, 26p.
(Technical rept. no. WVT-11-6214)
Unclassified report

DESCRIPTORS: *Casting, Ceramic materials, Preparation, Precision finishing, Molding, Molding materials.

AD-298 702 Div. 26
(TISTB/AW) OTS price $4.60

System Development Corp., Santa Monica, Calif.
USERS' GUIDE FOR A MANUAL PERT OPERATION.
13 Feb 63, 46p. (Technical memo. no. TM-1024/000/00)
Unclassified report

DESCRIPTORS: *Management engineering, *Costs, Scheduling, Communication systems, Analysis.

AD-298 717 Div. 26
(TISTM/BRW) OTS price $2.50

Douglas Aircraft Co., Inc., Santa Monica, Calif.
FOR THE SPACE AGE. A BIBLIOGRAPHY OF SANDWICH PLATES AND SHELLS,
by J. I. Foss. Dec 62, 98p. (Rept. no. SM-42883)
Unclassified report

DESCRIPTORS: *Sandwich construction, *Bibliographies, Structural shells, Sandwich panels, Manufacturing methods, Mechanical properties, Test methods, Quality control.

AD-298 984 Div. 26
(TISTE/OHD) OTS price $9.10

Massachusetts Inst. of Tech., Cambridge.
BASIC APPLIED RESEARCH IN FLUID POWER CONTROL.
Progress rept. no. 2, 1 Feb-31 May 62,
by J. L. Shearer, D. H. Marcus and others.
Dec 62, 103p. (Rept. no. 8998-2)
(Contract AF 33(657)7535, Proj. 8226)
(ASD TDR 62-788) Unclassified report

DESCRIPTORS: *Pneumatic servomechanisms, *Servomechanisms, *Control systems, Feedback, Servo amplifiers, Valves, Mathematical analysis, Gas bearings, Jets, Gas flow.

AD-298 993 Div. 26, 15
(TISTP/WH) OTS price $3.60

California U., Los Angeles.
NUMERICAL METHODS FOR QUEUES WITH COMPLEX SERVICE RATES,
by Richard V. Evans. 1962, 30p. refs. (Research rept. no. 82; Working paper no. 29)
Unclassified report

DESCRIPTORS: *Queuing theory, *Probability, *Numerical methods and procedures.

AD-299 002 Div. 26, 2
(TISTP/TL) OTS price $1.60

Kaysam Corp. of America, Paterson, N. J.
PRODUCTION ENGINEERING MEASURE FOR MANUFACTURE OF METEOROLOGICAL BALLOONS TYPE ML-541( )/UM.
Quarterly progress rept. no. 3, 19 Oct 62-18 Jan 63,
by Murray Miner. 18 Jan 63, 11p.
(Contract DA 36-039-sc-85988)
Unclassified report

DESCRIPTORS: *Meteorological balloons, *Production, Industrial production, Manufacturing methods, Industrial, Mobilization, Quality control, Engineering.

AD-299 009 Div. 26, 15
(TISTP/WH) OTS price $8.60

Northeastern U., Boston, Mass.
MATHEMATICAL ANALYSIS OF COMPLEX SYSTEMS
Final rept., 1 Nov 58-30 Sep 62,
by Ladislav Dolansky, Ralph E. Bach, Jr., and Samuel M. Giveen. 30 Sep 62, 95p.
(Contract AF 19(604)4573, Proj. 5632)
(AFCRL 63-38) Unclassified report

DESCRIPTORS: *Lanchester equations, *Queueing theory, *Game theory, *Numerical methods and procedures, *Statistical analysis, Operation research.

AD-299 274 Div. 26
(TISTE/OHD) OTS price $3.60

Research Labs. for the Engineering Sciences, U. of Virginia, Charlottesville.
RESEARCH INVESTIGATION OF MAGNETIC AND ELECTRIC FORCES FOR ROTATING SHAFT SUSPENSION.
Technical progress rept., Dec 62-Feb 63,
by B. J. Gilpin. Mar 63, 26p. (Rept. nos. EMI-4454-111-63; BPSN: 2(3-3145)-61081)
(Contract AF 33(657)8352)
Unclassified report

DESCRIPTORS: *Bearings, Magnetic fields, Electromagnets, Alternating current, Solenoids, Resonance, Audiofrequency, Mathematical analysis, Electric fields, Electric motors, Damping, Magnets.

27. PROPULSION SYSTEMS

AD-298 181 Div. 27
(TISTA/LSK) OTS price $1.10

Marquardt Corp., Van Nuys, Calif.
(No title).
Letter progress rept., 27 Jan-23 Feb 63,
by W. A. Whitney. 23 Feb 63, 4p. (Rept. no. PR 273-15, pt. 1)
(Contract AF 33(657)7770)
Unclassified report

DESCRIPTORS: *Ramjet engines, Fuel systems, Calibration, Reliability, Storage.

AD-298 221 Div. 27
(TISTA/LSK) OTS price $1.60

Foreign Technology Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
EXPERIMENTAL BITM AIR TURBINES,
by I. I. Kirillov and I. G. Gogolev. 28 Jan 63, 10p. (Trans. no. FTD-TT-62-1742 from Izvestiya Vysshykh Zavedeniy. Energetika 5:pp. 119-122, USSR, 1962)
Unclassified report

DESCRIPTORS: *Gas turbines, Turbines, Aerodynamic characteristics, Air.

AD-298 237 Div. 27, 9
(TISTA/GEC) OTS price $1.60

Foreign Technology Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
ON THE DEPENDENCE OF THE COEFFICIENT OF CONSERVATION OF PRESSURE OF A RETARDED FLOW σ ON THE VELOCITY FACTOR φ IN THE SUPERSONIC SECTION OF A LAVAL NOZZLE WITH INCOMPLETE AND COMPLETE EXPANSION OF THE GAS IN THE NOZZLE,
by V. S. Ivanov. 22 Jan 63, 10p. (Trans. no. FTD-TT-62-1643 from ''Aviatsionnaya Tekhnika'' 1:pp. 75-81, 1962)
Unclassified report

DESCRIPTORS: *Laval nozzles, *Exhaust gases, Pressure, Velocity, Mathematical analysis, Supersonic characteristics, Gas flow, Supersonic flow.

AD-298 265 Div. 27
(TISTM/BRW) OTS price $1.60

Aerojet-General Corp., Sacramento, Calif.
ACOUSTICAL ANALYSIS OF FILAMENT-WOUND POLARIS CHAMBERS.

Bi-monthly progress rept. no. 3,
by A. T. Green. 25 Jan 63, 1v. (Rept. no. 0672-01BM-3)
(Contract NOw 62-1007-c(FBM))
Unclassified report

DESCRIPTORS: *Rocket cases, Test methods, Hydrostatic pressure, Sound, Velocity, Determination, Composite materials, Glass textiles, Plastics, Filament wound construction, Acoustic properties.

AD-298 780 Div. 27
(TISTA/GEC) OTS price $7.60

Wyle Labs., Inc., El Segundo, Calif.
CRYOGENIC MASS FUEL FLOW TRANSMITTERS,
by Donald B. Pearson, William H. Boylan and others. Dec 62, 74p.
(Contract AF 33(657)9786)
Unclassified report

DESCRIPTORS: *Flowmeters, Fluid flow, Liquefied gases, Design, Hydrogen, Nitrogen, Oxygen, Fluorine, Instrumentation, Cryogenics, Fuel systems, Liquid rocket propellants.

AD-299 280 Div. 27
(TISTM/BRW) OTS price $6.60

Naval Ordnance Lab., White Oak, Md.
SOLID-PROPELLANT ROCKET IGNITION SYSTEMS. IV. EVALUATION OF THE NOL ''HI-LO'' (ROCKET-IN-ROCKET) IGNITER,
by Charles F. Sharn. 13 Nov 62, 52p. table.
(Rept. no. NOLTR 62-189)
Unclassified report

DESCRIPTORS: *Rocket igniters, *Rocket motors, Evaluations of state, Combustion, Solid rocket propellants, Ignition, Design, Interior ballistics.

AD-299 317 Div. 27, 22
(TISTA/LSK) OTS price $1.60

Naval Ordnance Lab., White Oak, Md.
GUIDED MISSILE PROPULSION SYSTEM, HAZARDS OF ELECTROMAGNETIC RADIATION TO ORDNANCE (HERO); RF CHARACTERISTICS OF ELECTRO-EXPLOSIVE DEVICES.
Quarterly progress rept., 1 Apr-30 June 62.
21 Nov 62, 1v.
Unclassified report

DESCRIPTORS: *Electromagnetic waves, *Rocket motors, *Explosives initiators, Ordnance, *Hazards, Radiofrequency, Rocket igniters, Radiation hazards, Ignition.

AD-299 318 Div. 27, 22
(TISTA/LSK) OTS price $1.60

Naval Ordnance Lab., White Oak, Md.
GUIDED MISSILE PROPULSION SYSTEM, HAZARDS OF ELECTROMAGNETIC RADIATION TO ORDNANCE (HERO); RF CHARACTERISTICS OF ELECTRO-EXPLOSIVE DEVICES.
Quarterly progress rept., 1 July-30 Sep 62.
20 Mar 63, 1v.
Unclassified report

DESCRIPTORS: *Electromagnetic waves, *Rocket motors, *Explosives initiators, Ordnance, Hazards, Radiofrequency, Rocket igniters, Radiation hazards, Ignition.

28. PSYCHOLOGY AND HUMAN ENGINEERING

AD-298 655 Div. 28, 16
(TISTB/AW) OTS price $1.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
PERFECTION OF INTEROCEPTIVE ANALYSIS DURING ACUTE HYPOXEMIA AND HYPERCAPNIA IN MAN,
by A. B. Gandel'sman and N. B. Prokopovich.
20 Feb 63, 12p. (Trans. no. FTD-TT-62-1903 from Zhurnal Vysshey Nervnoy Deyatel'nosti imeni I. P. Pavlova, vol. 12, no. 2, pp. 223-228, 1962)
Unclassified report

DESCRIPTORS: *Sensory mechanisms, *Proprioception, Hypoxia, Stimulation, Chemoreceptors, Tissues (Biology), Reflexes, Training, Conditioned response.

AD-298 747 Div. 28
(TISTB/LMH)

Naval Civil Engineering Lab., Port Hueneme, Calif.
BEHAVIORAL RESEARCH AND ASSOCIATED STUDIES.
Jan 63, 31p.
Unclassified report

DESCRIPTORS: *Bibliographies, *Psychology, Decision making, Group dynamics, Anxiety, Attitudes, Behavior, Leadership, Learning, Motivation, Education.

AD-298 927 Div. 28
(TISTB/AW) OTS price $1.60

RAND Corp., Santa Monica, Calif.
TOWARD AN INFORMAL AND CREATIVE CONFERENCE METHOD,
by Benjamin Keller. Mar 63, 13p. (Rept. no. P-2701)
Unclassified report

DESCRIPTORS: *Communication theory, *Group dynamics, Symposia, Analysis, Verbal behavior, Man, Effectiveness.

AD-299 272 Div. 28
(TISTB/AW) OTS price $4.60

System Development Corp., Santa Monica, Calif.
LISTEN STUDY: THE CONSTRUCTION AND TESTING OF AN AUDITORY DISCRIMINATION TRAINING PROGRAM,
by R. P. Cunningham, N. M. Moler, and M. S. Sheldon. 7 Jan 63, 39p. (Technical memo. no. TM-929)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Hearing, *Sound signals, Radio jamming, Operators (Personnel), Training, Audiofrequency, Air Defense Command, Intelligibility.

AD-299 282 Div. 28
(TISTB/CCH) OTS price $5.60

Philco Corp., Palo Alto, Pa.
HUMAN ENGINEERING DESIGN CHECK LIST.
1 Feb 63, 1v. (Rept. no. WDL-TR1968)
(Contract AF 04(695)113)
Unclassified report

DESCRIPTORS: *Human engineering, *Performance tests, Design.

29. QUARTERMASTER EQUIPMENT AND SUPPLIES

AD-298 613 Div. 29
(TISTB/AW) OTS price $1.60

Army Test and Evaluation Command, Aberdeen Proving Ground, Md.
A PRELIMINARY STUDY OF THE RELATIONSHIPS BETWEEN FOOD PREFERENCE RATINGS OBTAINED UNDER FIELD AND GARRISON CONDITIONS,
by Thomas B. Burt. Mar 63, 20p. tables.
(TECOM proj. no. 7E-3907-01)
Unclassified report

DESCRIPTORS: *Military rations, Taste, Test methods, Acceptability.

30. RESEARCH AND RESEARCH EQUIPMENT

AD-298 182 Div. 30
(TISTP/FR) OTS price $1.10

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
CONVERSATION WITH A MACHINE.
4 Feb 63, 2p. (Trans. no. FTD-TT-63-76 from Kazakhstanskaya Pravda, p. 4, 16 Nov 62)
Unclassified report

DESCRIPTORS: *Control systems, Speech.

AD-298 188 Div. 30
(TISTP/JW) OTS price $1.10

System Development Corp., Santa Monica, Calif.
SCF COMPUTER PROGRAM SYSTEMS MANUAL UTILITY PROGRAMS GENERALIZED INPUT ROUTINE (INPUT),
by T. R. Henry. 2 Jan 63, 8p. (Technical memo. no. TM-(L)-705/032/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Computers, Programming (Computers, Handbooks, Input-output devices.

AD-298 189 Div. 30
(TISTP/JW) OTS price $1.10

System Development Corp., Santa Monica, Calif.
GENERALIZED INPUT ROUTINE,
by T. R. Henry. 25 Jan 63, 5p. (Rept. no. TM-(L)-705/032/00A)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Computers, Programming (Computers), Handbooks, Input-output devices.

AD-298 190 Div. 30
(TISTP/JW) OTS price $1.10

System Development Corp., Santa Monica, Calif.
SCF COMPUTER PROGRAM SYSTEMS MANUAL UTILITY PROGRAMS SATELLITE PAPER TAPE TRANSFERS (SATPATT),
by C. L. Remstad. 21 Feb 63, 8p. (Technical memo. no. TM-(L)-705/038/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Computers, Computer storage devices, Data processing systems, Tapes.

AD-298 191 Div. 30
(TISTP/JW) OTS price $1.10

System Development Corp., Santa Monica, Calif.
SATELLITE MODE OF OUTPUT TABLE (SMOOT),
by C. L. Remstad. 21 Feb 63, 6p. (Rept. no. TM-(L)-705/037/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Computers, Programming (Computers, Handbooks, Input-output devices.

AD-298 192 Div. 30
(TISTP/JW) OTS price $2.60

System Development Corp., Santa Monica, Calif.
UTILITY PROGRAM DESCRIPTIONS MILESTONE XI. GENERALIZED INPUT ROUTINE (INPUT),
by T. R. Henry. 4 Jan 63,
21p. (Technical memo. TM-(L)-715/033/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Computers, Programming (Computers), Input-output devices.

Division 30 - RESEARCH AND RESEARCH EQUIPMENT

AD-298 193 Div. 30
(TISTP/FR) OTS price $1.60

System Development Corp., Santa Monica, Calif.
SPECIFICATIONS FOR THE SIMULATION OF TELEMETRY DATA AS AN INPUT FROM THE TDP TO THE TLM COMPUTER AT THE REMOTE TRACKING STATION (MILESTONE 3 & 4 COMBINED),
by John Ng. 26 Feb 63, 13p. (Technical memo. no. TM-(L)-734/034/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Telemetering data, *Digital computers, Magnetic tape, Simulation.

AD-298 194 Div. 30
(TISTP/JW) OTS price $1.10

System Development Corp., Santa Monica, Calif.
OCTAL CARD LOADER (SOCLOD),
by M. J. Sweeney and R. C. Wise. 19 Feb 63, 3p. (Rept. no. TM-1003/004/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Data processing systems, Reliability, Computers, Programming (Computers).

AD-298 199 Div. 30
(TISTP/JW) OTS price $1.10

System Development Corp., Santa Monica, Calif.
UTILITY SYSTEM PROGRAMMING PROPOSALS. A TWO TAPE SYSTEM FOR COPII,
by Billie R. Pruett. 26 Feb 63, 9p. (Technical memo. no. TM-890/006/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Data processing systems, Input-output devices, Computers, Programming (Computers).

AD-298 203 Div. 30
(TISTP/JW) OTS price $26.00

California U., Los Angeles.
ASSIGNMENT OF INVENTORY OF A VARIABLE STRUCTURE COMPUTER,
by Rein Turn. Jan 63, 499p. (Rept. no. 63-5)
(Contract Nonr-2352)
Unclassified report

DESCRIPTORS: *Computer logic, Programming (Computers), Mathematical logic, Costs, Analysis of variance.

AD-298 210 Div. 30, 15
(TISTP/JW) OTS price $3.60

Foreign Tech. Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
FUNDAMENTALS OF THE GENERAL THEORY OF QUASI-ANALOG SYSTEMS,
by G. Ye. Pukhov. 22 Jan 63, 34p. (Trans. no. FTD-TT-62-1557/1+2+4 from Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, No. 9, pp. 3-21, 1961)
Unclassified report

DESCRIPTORS: *Analog systems, Control systems, Models (Simulators), Equations, Computer logic, Simulation.

AD-298 272 Div. 30
(TISTP/WH) OTS price $6.60

Princeton U., School of Engineering, N. J.
''COUNTABLE-BIT, NOMOGRAPHIC ELECTRONIC COMPUTATION'',
by Douglas P. Adams. 11 Feb 63, 1v. (Rept. no. 5)
(Contract AF 30(602)2411)
Unclassified report

DESCRIPTORS: *Projective geometry, *Digital systems, *Nomographs, *Special purpose computers, Digital computers, Design.

AD-298 276 Div. 30
(TISTE/JBM) OTS price $2.60

Temple U., Philadelphia, Pa.
VOLTAGE MEASUREMENTS IN THE PRESENCE OF STRONG FIELDS,
by K. G. Moses and T. Korneff. 15 Dec 62, 13p. illus. (Scientific rept. no. 1)
(Contract AF 19(628)215, Proj. 8608)
(AFCRL 63-216) Unclassified report

DESCRIPTORS: *Electric potential, *Measuring devices (Electrical & electronic), Electric discharges, Electric currents, Transients, Electric fields, Reduction, Suppressors, Measurement.

AD-298 279 Div. 30, 9
(TISTA/GEC) OTS price $3.60

Arnold Engineering Development Center, Arnold Air Force Station, Tenn.
CALIBRATION OF THE 100-INCH HYPERVELOCITY TUNNEL (F),
by Henry W. Ball. Mar 63, 28p. (Technical rept. no. AEDC-TDR-63-46)
(Contract AF 40(600)1000)
Unclassified report

DESCRIPTORS: *Hypersonic wind tunnels, *Nose cones, Pressure, Conical bodies, Heat transfer, Aerodynamic characteristics, Model tests, Calibration, Hypersonic characteristics.

AD-298 280 Div. 30
(TISTA/GEC) OTS price $3.60

Arnold Engineering Development Center, Arnold Air Force Station, Tenn.
CALIBRATION OF THE AEDC-PWT 1-FT SUPERSONIC MODEL TUNNEL AT MACH NUMBERS 1.5 TO 4.5,
by J. R. Henson and E. H. Sloan. Mar 63, 29p.
(Contract AF 40(600)1000, Proj. 8950)
(AEDC TDR 63-47) Unclassified report

DESCRIPTORS: *Supersonic wind tunnels, Boundary layer, Wind tunnel nozzles, Design, Aerodynamic characteristics, Supersonic characteristics, Calibration.

AD-298 289 Div. 30, 9, 1
(TISTA/LSK) OTS price $17.00

Naval Air Station, Lakehurst, N. J.
WIND TUNNEL CORRELATION STUDY OF NORTH AMERICAN TILT-WING MODEL TESTED IN THE NACAL 14' X 16'

TUNNEL AND THE AIRSHIP MODEL TEST FACILITY,
by Peter O. Erlandsen, John G. Zarcaro, and John W. Olcott. 28 Sep 62, 1v.
Unclassified report

DESCRIPTORS: *Variable-incidence wings, *Wind tunnels, *Airships, *Vertical take-off planes, Transport planes, Short take-off planes, Subsonic characteristics, Airplane models, Experimental data, Tables, Aerodynamic characteristics, Model tests, Instrumentation, Wind tunnel models.

AD-298 304 Div. 30, 25
(TISTW/PCR) OTS price $6.60

Microwave Research Inst., Polytechnic Inst. of Brooklyn, N. Y.
DC EFFECTS UNDER MICROWAVE EXCITATION OF THIN FERRITE FILMS,
by William Heinz. 3 Oct 62, 58p. (Research rept. no. PIBMRI-1086-62)
(Contract AF 18(600)1505)
Unclassified report

DESCRIPTORS: *Ferrites, *Excitation, Direct current, Theory, Magnetic properties, Magnetite, Hall effect, Geometry, Mathematical analysis, Equations, Thin films (Storage devices), Microwaves.

AD-298 580 Div. 30
(TISTP/JW) OTS price $3.50

Lockheed Aircraft Corp., Sunnyvale, Calif.
MODULAR ARITHMETIC TECHNIQUES.
Final rept., 1 July 61-31 Oct 62,
by E. N. Belland, Y. A. Keir and others. Jan 63, 232p. (Rept. no. 2-38-62-1)
(Contract AF 33(616)7326, Proj. 7662)
(ASD TDR 62-686) Unclassified report

DESCRIPTORS: *Digital computers, *Computer logic, Design, Control systems, Airborne, Numerical analysis.

AD-298 586 Div. 30
(TISTW/RD) OTS price $1.60

Friez Instrument Div., Bendix Corp., Baltimore, Md.
DESIGN, DEVELOPMENT AND FABRICATION OF BAROSWITCH REMOTE XM-10; BAROSWITCH, PRESET XM-11; AND CONTROL BAROSWITCH SETTING: XT-4126.
Progress rept. no. 22, 1 Dec 62-31 Jan 63,
by D. M. Potter and G. F. Hobday. 5 Feb 63, 1v.
(Contract DA 36-034-ORD-2890A)
Unclassified report

DESCRIPTORS: *Pressure switches, Vibration, Shock resistance, Pressure, Measurement, Tests.

AD-298 624 Div. 30, 15
(TISTP/JW) OTS price $9.60

Packard-Bell Electronics Corp., Los Angeles, Calif.
TECHNIQUES FOR COMBINATORIAL COMPUTATION.
Final rept.
by P. N. Armstrong and J. Dugundji. 22 May 62, 108p. (Rept. no. PBC 4127)
(Contract AF 30(602)2395, Proj. 4027)
(RADC TDR 62-340) Unclassified report

DESCRIPTORS: *Digital computers, Numerical analysis, Simultaneous equations, Relaxation time, Programming (Computers), Linear programming, Linear systems, Data processing systems.

AD-298 705 Div. 30
(TISTW/RD) OTS price $1.10

General Electric Co., Utica, N. Y.
QRC-139A AEROSPACE GROUND EQUIPMENT (AGE).
Monthly progress rept. no. 12, 12 Feb-13 Mar 63. 15 Mar 63, 8p.
(Contract AF 33(604)39443)
Unclassified report

DESCRIPTORS: *Spectrum analyzers, Radio interference, Tests, Temperature, S band, L band, Frequency converters, Ground support equipment, Broadband.

AD-298 731 Div. 30
(TISTP/FR) OTS price $3.60

Air Force Cambridge Research Labs., Bedford, Mass.
WIND MEASURING SET AN/GMQ-20(V) SYSTEM EVALUATION,
by Russell M. Peirce, Jr. Dec 62, 31p. (Rept. no. AFCRL-62-1110)
Unclassified report

DESCRIPTORS: *Anemometers, *Wind-direction indicators, Recording systems, Tests.

AD-298 738 Div. 30
(TISTP/FR) OTS price $5.60

Air Force Cambridge Research Labs., Bedford, Mass.
COLLECTION OF COMPUTER PROGRAMS APPLICABLE TO METEOROLOGICAL DATA PROCESSING,
by Wayne D. Mount, Eugene A. Bertoni, and Iver A. Lund. Nov 62, 56p. (Rept. no. AFCRL-62-1098)
(Proj. 8624)
Unclassified report

DESCRIPTORS: *Programming (Computers), *Meteorological parameters, Data processing systems.

AD-298 784 Div. 30, 15
(TISTW/JEA) OTS price $3.60

David Sarnoff Research Center, Princeton, N. J.
THRESHOLD LOGIC IN ARTIFICIAL INTELLIGENCE,
by R. O. Winder. 15 Nov 62, 28p. (Scientific rept. no. 6)
(Contract AF 19(604)8423, Proj. 4641)
(AFCRL-63-6) Unclassified report

DESCRIPTORS: *Artificial intelligence, *Computer logic, Linear programming, Geometry, Pattern recognition, Input-output devices, Networks, Mathematical logic, Mathematical predictions, Switching circuits, Synthesis, Bionics, Special functioning, Probability.

AD-298 842 Div. 30, 25
(TISTE/JBM) OTS price $.50

Watertown Arsenal Labs., Mass.
FREQUENCY BANDWIDTH CONSIDERATIONS IN ULTRASONIC TESTING,
by Charles P. Merhib. Jan 63, 13p. (Technical rept. no. WAL TR 143.7/1)
Unclassified report

DESCRIPTORS: *Ultrasonic radiation, *Test methods, Materials, Test equipment, Models (Simulations), Transducers (Acoustics), Theory, Attenuation, Tests, Frequency, Sensitivity, Band spectrum.

Division 30 - RESEARCH AND RESEARCH EQUIPMENT

AD-298 934 Div. 30
(TISTP/JW) OTS price $3.60

Navy Electronics Lab., San Diego, Calif.
QUANTIZATION ERRORS AND THEIR EFFECTS IN DIGITAL CONTROL SYSTEMS,
by J. B. Slaughter. 31 Jan 63, 30p. (NEL rept. no. 1156)
Unclassified report

DESCRIPTORS: *Digital computers, Feasibility studies, Errors, Design, Control systems.

AD-298 949 Div. 30, 28
(TISTB/AW) OTS price $4.60

RAND Corp., Santa Monica, Calif.
LEARNING, GENERALITY AND PROBLEM-SOLVING,
by Allen Newell. Feb 63, 34p. (Memo. no. RM-3285-1-PR)
(Contract AF 49(638)700, Proj. RAND)
Unclassified report

DESCRIPTORS: *Artificial intelligence, *Learning, Programming (Computers), Memory, Pattern recognition, Operators (Mathematics)

AD-298 966 Div. 30
(TISTB/AW) OTS price $1.60

RAND Corp., Santa Monica, Calif.
ELECTRONIC DATA PROCESSING FOR CITIES -- THE BROAD LOOK,
by Edward F. R. Hearle. Feb 63, 11p. (Rept. no. P-2714)
Unclassified report

DESCRIPTORS: *Data processing systems, *Urban areas, Electronic accounting machines, Data storage systems, Management engineering, Feasibility studies.

AD-298 982 Div. 30
(TISTP/TL) OTS price $11.00

Illinois U., Urbana.
MEASUREMENT OF PRESSURE IN AN ULTRA-HIGH VACUUM,
by R. L. Heimburg, A. B. Huang and others.
Mar 63, 130p.
(Contract AF 40(600)909, Proj. 7778)
(AEDC TDR 63-49) Unclassified report

DESCRIPTORS: *Vacuum apparatus, Pressure, Measurement, Tables, Low pressure research, Pressure gages, Calibration, Ionization gages, Adsorption, Measuring devices.

AD-299 075 Div. 30
(TISTA/GEC) OTS price $1.00

Southampton U. (Gt. Brit.)
THE UNIVERSITY OF SOUTHAMPTON RANDOM SIREN FACILITY.
Summary rept., Dec 61-62 on Metallic Materials,
by B. L. Clarkson and S. A. Pietrusewicz. Jan 63, 33p.
(Contract AF 61(052)504, Proj. 7351)
(ASD TDR 63-91) Unclassified report

DESCRIPTORS: *Test facilities, *Turbojet engines, *Noise generators, *Sonic fatigue, Noise, Vibration, Physics, Jet engine noise, Acoustics, Simulation, Instrumentation, Test methods.

AD-299 088 Div. 30, 8
(TISTE/JBM) OTS price $3.60

Aerial Measurements Lab., Northwestern U. Evanston, Ill.
SOLID STATE ANALOG-TO-DIGITAL CONVERTER.
Quarterly progress rept. no. 3, Nov-Dec 62,
by Paul G. Sedlewicz and Robert E. Onley. Jan 63, 27p. (Memo. no. 381)
(Contract NOw 62-0749-d)
Unclassified report

DESCRIPTORS: *Analog-to-digital converters, *Semiconductor devices, Silicon, Surface properties, Configuration, Diodes (Semiconductor), Mechanical working, Crystals, Crystal structure, Resistance (Electrical), Manufacturing methods, Solid state physics, Work functions, Semiconductors.

AD-299 104 Div. 30
(TISTP/FR) OTS price $1.60

System Development Corp., Santa Monica, Calif.
OPERATING INSTRUCTIONS FOR THE AUGMENTED TRACKING STATION SIMULATION PROGRAM SIMSTN (MILESTONE 7).
20 Feb 63, 10p. (Technical memo. no. TM-(L)-734/033/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Programming (Computers), Satellites (Artificial), Tracking, Data transmission systems, Simulation.

AD-299 128 Div. 30
(TISTB/AW) OTS price $1.60

Karolinska Inst, Stockholm (Sweden).
(No title).
Final technical rept., Nov 61-Nov 62,
by C. G. Heden. Nov 62, 13p.
(Contract DA 91-591-EUC-2036)
Unclassified report

DESCRIPTORS: *Biological laboratories, *Centrifuges, Bearings, Water, Escherichia, Microorganisms.

AD-299 255 Div. 30
(TISTW/PCR) OTS price $3.60

Naval Ordnance Lab., Corona, Calif.
THE NOLC AIR GUN FACILITY: A HIGH-VELOCITY-ENVIRONMENT SIMULATOR,
by J. L. Day and C. A. Kessler. 15 Nov 62, 36p.
(NOLC rept. no. 572)
Unclassified report

DESCRIPTORS: *Guns, *Test facilities, Ordnance, Fuzes (Ordnance), Test equipment, Design, Air, Velocity.

AD-299 260 Div. 30
(TISTP/JW) OTS price $5.60

System Development Corp., Santa Monica, Calif.
A DESCRIPTION OF THE COMPUTER PROGRAM IMPLEMENTATION PROCESS,
by Leonard Farr. 25 Feb 63, 49p. (Technical memo. no. TM-1021-002/00)
(Contract SD-97)
Unclassified report

DESCRIPTORS: *Computers, *Control systems, Data processing systems, Programming (Computers), Analysis.

AD-299 357 Div. 30
(TISTW/JEA) OTS price $6.60

System Development Corp., Santa Monica, Calif.
STIN TRANSITION PROGRAM REMOTE STATION TO STA MILESTONE 5,
by R. A. Keyes. 23 Jan 63, 57p. (Technical memo. no. TM(L)-787/001/00)
(Contract AF 19(628)1648)
Unclassified report

DESCRIPTORS: *Data processing systems, *Punched tape, *Punched cards, *Satellites (Artificial), Input-output devices, Magnetic tape, Programming (Languages), Simulation, Data transmission systems, Computers, Magnetic recording systems, Programming (Computers), Tracking.

AD-299 361 Div. 30
(TISTP/TL) OTS price $1.60

Applied Mathematics and Statistics Lab., Stanford U., Calif.
MINIMUM AND BASIC SOLUTIONS TO SINGULAR LINEAR SYSTEMS,
by J. B. Rosen. 28 Feb 63, 10p. (Technical rept. no. 29)
(Contract Nonr-22537, Proj. NR 044 211)
Unclassified report

DESCRIPTORS: *Linear systems, *Least squares method, *Matrix algebra, Vector analysis, Transformations (Mathematics), Errors, Numerical analysis, Nonlinear systems, Programming (Computers).

31. SHIPS AND MARINE EQUIPMENT

AD-299 073 Div. 31, 17, 14
(TISTM/EJH) OTS price $3.60

Rubber Lab., Mare Island Naval Shipyard, Vallejo, Calif.
DEVELOPMENT OF CONSTRAINED-LAYER DAMPING TREATMENTS FOR STEEL PLATES,
Progress rept. no. 14,
by J. Oser. 7 Mar 63, 13p. illus. tables. (Tech rept. no. 94-45)
Unclassified report

DESCRIPTORS: *Ship plates, *Damping, Submarines, Metal plates, Aluminum, Steel, Plastics, Vibration, Laminates, Woolen textiles, Epoxy plastics, Adhesives.

32. MISCELLANEOUS ARTS AND SCIENCES

AD-298 209 Div. 32
(TISTA/LSK) OTS price $1.60

Foreign Technology Div., Air Force Systems Command, Wright-Patterson Air Force Base, Ohio.
REVIEW OF THE FORCES OF PARACHUTISTS,
by G. Pyasetskaya. 5 Feb 63, 11p. (Trans. no. FTD-TT-62-1700 from Kryl'ya Rodiny 10:pp. 9-11, USSR, 1961)
Unclassified report

DESCRIPTORS: *Parachute jumping, Recreation.

AD-298 575 Div. 32, 30
(TISTB/LMH) OTS price $2.60

George Washington U., Washington, D. C.
SELECTING SOURCES OF RESEARCH AND DEVELOPMENT COMPETENCE,
by Ralph E. Andrea. Mar 63, 24p.
Unclassified report

DESCRIPTORS: *Research program administration, *Armed forces research, Bibliographies, Scientific research, Government procurement, Military requirements, Coding, Sources, Industries.

AD-298 630 Div. 32
(TISTB/LMH) OTS price $1.60

Technical Military Planning Operation, General Electric Company, Santa Barbara, Calif.
THE ECONOMICS OF US - USSR NATIONAL SECURITY EXPENDITURES,
by Dale J. Hekhuis. Jan 58, 16p. (Rept. no. RM-58-TMP-1)
Unclassified report

DESCRIPTORS: *Economics, *Military requirements, *War potential, National defense, Costs, Industrial production, Limited war, Feasibility studies, Foreign policy, Propaganda, Budgets.

AD-298 701 Div. 32
(TISTP/FR) OTS price $3.60

System Development Corp., Santa Monica, Calif.
PRINCIPLES OF INFORMATION-PROCESSING SYSTEM DESIGN. PART II,
by George M. Masters. 19 Feb 63, 37p. (Technical memo. no. TM-743/002/00)
Unclassified report

DESCRIPTORS: *Documentation.

AD-298 745 Div. 32
(TISTB/LMH) OTS price $7.60

Air Force Cambridge Research Labs., Bedford, Mass.
ON CONJUNCTIVE NOMINALIZATIONS IN ENGLISH,
by R. A. Jenkins. Aug 62, 70p. (Rept. no. AFCRL-62-551)
Unclassified report

DESCRIPTORS: *Language, *Speech representation, Documentation, Speech, Verbal behavior, Vocabulary, Theory.

AD-298 846 Div. 32
(TISTB/AW) OTS price $2.60

RAND Corp., Santa Monica, Calif.
BRITISH ATTITUDES IN THE CUBAN CRISIS,
by H. A. DeWeerd. Feb 63, 23p. (Rept. no. P-2709)
Unclassified report

DESCRIPTORS: *Political science, Public opinion, Naval operations, Attitudes.

AD-298 990 Div. 32
(TISTB/AW) OTS price $9.60

Royal Inst. of Tech., Sweden.
ON THE PERCEPTION OF SWEDISH CONSONANTS IN

INTERVOCALIC POSITION,
by Sven Ohman. 1 Mar 62, 1v. (Rept. no. 25)
(Grant EOAR 62-82)
(AFCRL-62-789) Unclassified report

DESCRIPTORS: *Speech, *Language, Theory, Analysis, Identification, Test methods, Perception. Speech transmission.

AD-299 103 Div. 32
(TISTA/GEC) OTS price $18.00

Aerospace Information Div., Washington, D. C.
FUTURE TRENDS IN SOVIET SCIENCE AND TECHNOLOGY.
Report no. 3 on Review of Soviet and Sovet-Bloc Literature.
7 Feb 63, 279p. (AID rept. no. P-63-2)
Unclassified report

DESCRIPTORS: *Scientific research, Astrophysics, Nuclear energy, Computers, Biology, Meteorology, Geology, Electronics, Metals, Physics, Materials, Education, Reviews.

AD-299 295 Div. 32
(TISTP/FR) OTS price $3.60

Lockheed Aircraft Corp., Sunnyvale, Calif.
FURTHER SYLLABIC STUDIES FOR ALGORITHMIC PREDICTION OF ENGLISH PARTS OF SPEECH: AN ANNOTATED BIBLIOGRAPHY,
comp. by Eugene E. Graziano. Mar 63, 25p. (Special bibliography no. SB-63-3; Rept. no. 6-90-63-3)
Unclassified report

DESCRIPTORS: *Speech, Language, Bibliographies.

AD-299 313 Div. 32
(TISTB/AW) OTS price $3.60

RAND Corp., Santa Monica, Calif.
IS THE USSR SUPERIOR TO THE WEST AS A MARKET FOR PRIMARY PRODUCTS,
by Egon Neuberger. Mar 63, 37p. (Rept. no. P-2723)
Unclassified report

DESCRIPTORS: *Economics, *Commerce, Production, Industrial production, Analysis, Communism, Distribution, Political science, Cold war.

AD-299 350 Div. 32
(TISTB/AW) OTS price $12.00

RAND Corp., Santa Monica, Calif.
THE USSR AND THE WEST AS MARKETS FOR PRIMARY PRODUCTS: STABILITY, GROWTH AND SIZE,
by Egon Neuberger. Feb 63, 150p. (Memo. no. RM-3341-PR)
(Contract AF 49(638)700, Proj. RAND)
Unclassified report

DESCRIPTORS: *Economics, *Commerce, Communism, Political science, Analysis, Distribution, Production, Industrial production, Cold war.

AD-299 385 Div. 32
(TISTB/AW) OTS price $2.60

Ohio State U., Research Foundation, Columbus.
A STUDY OF WRITTEN COMMUNICATION (APPENDIX III AND IV - VOCABULARY LISTS).
Final rept.,
by Franklin H. Knower. Nov 62, 21p. (Rept. no. 4, vol. 2)
(Contract AF 30(602)2550, Proj. 4599)
(RADC TDR 62-611, vol. 2) Unclassified report

DESCRIPTORS: *Instruction manuals, *Language, Reading, Vocabulary, Effectiveness, Electronic equipment.

AD-299 386 Div. 32
(TISTB/AW) OTS price $1.60

Ohio State U., Research Foundation, Columbus.
A STUDY OF WRITTEN COMMUNIATION. APPENDIX VII - SUGGESTIONS FOR TECHNICAL MANUAL WRITING AND REVISION.
Final rept.,
by Franklin H. Knower. Nov 62, 9p. (Rept. no. 4, vol. V)
(Contract AF 30(602)2550, Proj. 4599)
(RADC TDR 62-611, vol. V) Unclassified report

DESCRIPTORS: *Instruction manuals, *Language, Reading, Vocabulary, Effectiveness, Electronic equipment.

AD-299 391 Div. 32
(TISTA/LSK) OTS price $5.60

Aerospace Corp., Los Angeles, Calif.
BIBLIOGRAPHY OF REPORTS PREPARED UNDER CONTRACT NO. AF 04(647)-930.
Final suppl., 1 July 61-30 June 62,
comp. by Barbara H. Peer. Rev. 31 July 62, 20 Feb 63, 1v. (Rept. no. CSR-930(9990)BR-1, final suppl.)
(Contract AF 04(647)930)
Unclassified report

DESCRIPTORS: *Bibliographies, *Indexes, Reports.

33. TRANSPORTATION

No Entries

NON-MILITARY AND OLDER MILITARY RESEARCH REPORTS

*Descriptors marked with an asterisk will be included in the cumulative indexes.

ASTRONOMY

Astrophysics

NASA N63-12929 OTS $1.75

Ames Research Center, National Aeronautics and Space Administration, Moffett Field, Calif.
THE LUNAR ORIGIN OF TEKTITES, by Dean R. Chapman and Howard K. Larson. Feb 63, 66p. 92 refs. Technical note D-1556.

NASA N63-14087 OTS $5.60

Center for Radiophysics and Space Research, Cornell U., Ithaca, N. Y.
PHOTOMETRIC STUDIES OF COMPLEX SURFACES, WITH APPLICATIONS TO THE MOON, by Bruce Hapke and Hugh Van Horn. Rept. on Grant NsG-119-61. Feb 63, 55p. 24 refs. CR SR-139.

NASA N63-12932 OTS $0.50

Goddard Space Flight Center, National Aeronautics and Space Administration, Greenbelt, Md.
PERIODIC ORBITS FOR MOON PROBES, by Su-shu Huang. Feb 63, 8p. 4 refs. Technical note D-1701.

BEHAVIORAL SCIENCES

PB 162 507 OTS $1.60

[Institute of Geodesy, Photogrammetry and Cartography] Ohio State U. Research Foundation, Columbus.
HUMAN ASPECTS OF PHOTOGRAPHIC INTERPRETATION, by Glenn A. Fry. Final summary rept. 1 May 58-30 Aug 59, on Contract AF 30(602)1580. Sep 59, 11p. Technical paper no. (696)-26; AD-251 585.

DESCRIPTORS: *Aerial photography, Military personnel, Visual perception, Ophthalmology, Aerial photographs, *Photographic analysis, Targets, Detection, *Aerial reconnaissance, Simulation, *Target recognition, Photographic intelligence, Military training, *Photo interpretation, Photo interpretability

Contents:
Comparative methods in photographic and television pictures
Blur-grain studies (photographic grain)
The effect of image degradation on the perceptions of complex patterns
Controlled search patterns
The problem of image degradation in training photointerpreters
Optimum working conditions
Fatigue effects
Inspection of complex objects

AD-292 793 OTS $2.60

Miami U. [Coral Gables, Fla.]
ACHIEVEMENT MOTIVATION, AFFILIATION MOTIVATION, AND TASK DIFFICULTY AS DETERMINANTS OF SOCIAL CONFORMITY, by Francis Sistrunk and John W. McDavid. Technical rept. no. 3 on Contract [Nonr] 840(22). Oct 62, 22p. 13 refs.

DESCRIPTORS: *Personality, *Group dynamics, Attitudes, Adjustment, Standards, Psychometrics, Analysis, Needs, *Motivation

The present investigation was undertaken to explore directly the interaction between a situational condition and personality or motivational factors.

BIOLOGICAL SCIENCES

BNL-5613 OTS $1.10

Brookhaven National Lab., Upton, N. Y.
EPITHELIAL CELL RETENTION IN SPECIFIC AREAS OF THE GASTROINTESTINAL TRACT, by M. Lipkin. [Rept. on Contract AT(30-2)GEN-16] 6 Oct 61, 9p. 8 refs.

Biochemistry

BNL-5607 OTS $2.60

Brookhaven National Lab., Upton, N. Y.
THE CHEMISTRY OF ENZYMES AT LOW TEMPERATURES. α-CHYMOTRYPSIN AND TRYPSIN, by Simon Freed and Mary H. Vise. 12 Sep 61, 30p. 11 refs.

PB 162 995 OTS $2.70

Polytechnic Inst. of Brooklyn, N. Y.
NEW APPROACHES FOR CHEMICAL WARFARE, by C. G. Overberger and R. G. Hiskey. Progress rept. no. 4, 1 Jan-31 Dec 57, on Crash Project, Subcontract to Contract DA 18-108-cml-5271. 12 Feb 58, 27p. 15 refs. AD-219 286.

DESCRIPTORS: *Chemical warfare, Proteins, *Enzymes, *Chymotrypsin, Degradation, Molecular structure, *Amino acids, Chromatographic analysis.

The present report describes qualitative evidence indicating that α-chymotrypsin exists as three or more chains held together by disulfide bonds. The smallest of these segments, fragment C, has been isolated in relatively pure form by fractional dialysis. Fragment B, a portion of the enzyme which does not dialyze has been hydrolyzed and appears to be a polypeptide, molecular weight 9,500, containing the following number of amino acids: Asp_9 Thr_9 Ser_{13} Glu_7 Pro_6 Gly_{11} Ala_{13} Val_{13} $Ileu_6$ Leu_7 Tyr_1 Phe_2 $(Cys/2)_a$ Try_3 Lys_x.

Radiobiology

TID-16553 OTS $2.00

National Sanitation Foundation, Ann Arbor, Mich.
PERSONAL RADIATION EXPOSURES IN FACILITIES LICENSED TO USE RADIOISOTOPES IN 1960, by Donald E. Barber and G. Hoyt Whipple. Rept. on Contract AT(11-1)1012. 31 Oct 62, 87p. 15 refs.

COO-226 OTS $10.50

Utah U. Coll. of Medicine, Salt Lake City.
RESEARCH IN RADIOBIOLOGY, by Thomas F. Dougherty. Semi-annual rept. of work in progress on the Chronic Toxicity program. Rept. on Contract AT(11-1)119. 30 Sep 62, 136p. 105 refs.

CHEMISTRY

IS-294 OTS $1.10

Ames Lab., Iowa State U. of Science and Tech.
TRANSPORT REACTIONS OF VANADIUM(III) HALIDES AND BROMINE, by Robert E. McCarley, James W. Roddy, and Keith O. Berry. Rept. on Contract W7405-eng-82. 9p. 4 refs.

NBL-188 OTS $2.25

New Brunswick Lab., N. J.
ANNUAL PROGRESS REPORT FOR THE PERIOD JULY 1961-JUNE 1962. Dec 62, 103p. 54 refs. NASA N63-12435.

OTS SB-509 $0.10

Office of Technical Services, Dept. of Commerce, Washington, D. C.
OZONE. Sep 62, 11p. 156 refs. OTS Selective Bibliography SB-509.

DESCRIPTORS: *Ozone, Bibliographies, Chemical properties, Chemical reactions, Chemical analysis, Spectroscopy, Catalysis, Ozonides, Radioactivity, Chemical engineering, Biology, Medicine, Public health, Deterioration, Atmosphere, Propellants, Production.

Lists 156 reports and translations added to the OTS catalog during the period 1945 to September 1962. Includes, among other subjects, treatment of the following research and development on ozone and ozonides: physical chemistry of ozone reactions; qualitative and quantitative chemistry of ozone, ozonides and other ozone substances; spectroscopic studies of ozone and ozone compounds; industrial applications; deteriorating effects; biomedical and public health aspects; studies of ozone and its effects on organisms and material in the upper atmosphere; high energy and propellant applications; and industrial production. (Author)

Physical Chemistry

NASA N63-12930 OTS $1.00

Ames Research Center, National Aeronautics and Space Administration, Moffett Field, Calif.
THEORETICAL INVESTIGATION OF UNSTEADY DIFFUSION WITH RECOMBINATION IN A TERNARY MIXTURE OF DIATOMIC MOLECULES, DISSOCIATED ATOMS, AND AN INERT GAS, by Walter A. Reinhardt. Feb 63, 35p. 6 refs. Technical note D-1651.

PB 158 912 OTS $3.60

Battelle Memorial Inst., Columbus, Ohio.
A MODEL STUDY OF THE INTERACTING EFFECTS OF MASS FIRES, by A. A. Putnam and C. F. Speich. Summary rept. on Contracts NAonr 24-60, CDM-SR-60-22, and CST-601. 9 Nov 61, 38p. 5 refs.

DESCRIPTORS: *Model tests, *Fires, *Combustion, Flames, Jets, Fuels, Turbulence, Control.

This research program attempted to investigate the validity of using gaseous fuels for a mass-fire model. The objectives of this program were thus twofold. First, since the fuel must be injected into the atmosphere to burn, the flow velocities and nozzle diameters needed to produce a turbulent diffusion, buoyancy-controlled flame had to be determined. It was believed that only this flame type could be used to produce a valid model. Second, if a valid model could be established, then the influence of jet spacing, fuel-flow rate, and jet-array geometry on the resulting flame array could be investigated. This summary report first considers the merging of individual flames from a theoretical standpoint and predicts the influence of jet spacing and fuel-flow rate on the height of the flame array. These theoretical results are then compared to the experimental data obtained during this program. A description of the apparatus used in this study is given.

EARTH SCIENCES

PB 162 795 OTS $12.00

[Arctic Construction] and Frost Effects Lab., Corps of Engineers, [Waltham] Mass.
DEVELOPMENT OF ICE MECHANICS TEST KIT FOR HYDROGRAPHIC OFFICE, U. S. NAVY. Final rept. Mar 50, 165p. 14 refs. Technical rept. no. 25.

DESCRIPTORS: *Ice, *Mechanics, *Test equipment, Portable, Drills, Design, Hydrographic office, Military equipment.

A portable test kit has been developed in which is included hand-operated equipment for penetrating ice to a depth of 15 feet or more and for obtaining ice specimens, together with equipment for measuring ice thickness, density, salinity, temperature and compressive strength. With construction of necessary adapters, additional tests may be performed, such as tension, shear, and flexure strength tests. A specially-designed auger included in the kit is of particular interest, providing hitherto unavailable equipment for drilling and coring ice.

AD-278 080 OTS $2.60

Electro-Mechanics Co., Austin, Tex.
A VARIABLE-MU SEISMOMETER, by Fred J. Morris. Final technical rept. on Project Vela-Uniform, Contract AF 19(604)8360. 14 May 62, 27p. AFCRL-62-634; ARPA Order no. 180-61; NASA N62-13745.

DESCRIPTORS: *Seismographs, Radiofrequency oscillators, Magnet coils, Ferrite cores.

This work has been performed to determine the feasibility of constructing a seismometer that utilizes the variable-mu characteristic of a ferrite sensing unit. A high inertia system has been constructed and transistorized circuitry completed whereby earth tremors may be recorded by a change in frequency of a beat note that results from a variation of the magnetic coupling between the stationary and the moving portions of the seismometer. The preliminary experimentation indicates that the variable-mu seismometer principle is a possibility. (Author)

PB 162 992 OTS $10.00

McGill U. Montreal (Canada).
CONTRIBUTIONS TO THE SEMINAR ON THE STRATOSPHERE AND MESOSPHERE JULY 6-20, 1961 AT STANSTEAD COLLEGE, STANSTEAD, QUEBEC PROVINCE, CANADA, by F. K. Hare. Scientific rept. no. 4 on Contract AF 19(604)8431. Mar 62, 130p. 45 refs. Meteorology Research Group Pub. in Meteorology no. 47; AFCRL 62-429; NASA N62-12594.

DESCRIPTORS: *Atmosphere, *Stratosphere, *Conferences, *Meteorology, *Arctic regions, Vortices, Atmospheric motion, *Asia, Periodic variations, *Tropical regions, *Antarctic regions, *Wind, Sounding rockets, Atmospheric temperature, *Tropopause, *Ozone, Distribution, Toxicity, Corrosive gases, Chemistry, *Sky brightness, *Solar radiation, Ultraviolet radiation, *Tracer studies

(See also AD-277 847)

TID-17224 OTS $2.50

Nevada Mining Analytical Lab., Reno.
GEOLOGICAL, GEOPHYSICAL, AND HYDROGICAL INVESTIGATIONS OF THE SAND SPRINGS RANGE, FAIRVIEW VALLEY, AND FOURMILE FLAT CHURCHILL COUNTY, NEVADA. Shoal Event, Project Shade, Vela Uniform Program. 1962, 134p. 22 refs.

TID-17224(suppl.) OTS $3.00

Nevada Mining Analytical Lab., Reno.
GEOLOGICAL, GEOPHYSICAL, AND HYDROLOGICAL INVESTIGATIONS OF THE SAND SPRINGS RANGE, FAIRVIEW VALLEY, AND FOURMILE FLAT CHURCHILL COUNTY, NEVADA. SUPPLEMENT: MAP FOLIO. Shoal Event, Project Shade, Vela Uniform Program. 1962.

PB 153 483 OTS $2.60

Electrical Engineering Research Lab., U. of Texas, Austin.
RESEARCH IN TROPICAL METEOROLOGY, by Wilfred H. Portig and John R. Gerhardt. Quarterly technical rept. no. 1, 1 July-30 Sep 60, on Contract DA 36-039-sc-84937. [1960] 24p. 1 ref. AD-247 489.

DESCRIPTORS: *Tropical regions, *Meteorology, Caribbean Sea, Scientific research.

Details are given of research in tropical meteorology. The relationships between meso- and synoptic-scale circulation patterns for meteorological parameters of particular interest to military operations are to be investigated. As a prelude to the design of a long range research program, the initial results are presented of an analysis program for the Caribbean area involving the association of perturbations in upper atmospheric circulation patterns with surface variation in precipitation, temperature, and wind fields. (Author)

PB 153 656 OTS $1.60

Massachusetts Inst. of Tech., Cambridge.
APPLICATION OF WEATHER RADAR TO FALLOUT PREDICTION, by Pauline M. Austin. Quarterly technical rept. no. 10, 1 June-31 Aug 60, on Contract DA 36-039-sc-75030. 15 Sep 60, 18p; AD-247 664.

DESCRIPTORS: *Radioactive fallout, *Meteorological radar, Atomic bomb explosions, Storms, Meteorological data, Atmospheric precipitation.

Excellent radar data in the form of signal intensity contours and RHI photographs were obtained for 29 summer storms including several squall lines. In addition, a few measurements of the reflectivity at two wavelengths of clear-air echoes from the vicinity of a sea-breeze front, some concurrent echo-intensity and fluctuation-rate records, and several simultaneous radar and rain gauge observations were made. All of the intensity-contour data from the summer of 1959 and some selected storms from 1960 were transcribed from 35 mm film to contour maps on transparent paper. Also the data from six instability lines observed in 1958 were digitalized. Some of the rainout computations have been completed. The results are discussed in detail in a thesis and are summarized. They show the effect on the distribution of radioactive fallout at the ground, 12 hours after a one-megaton detonation, of "standard" showers inserted at selected points 3, 6, and 9 hr after the detonation and also the modification produced by a widespread rain area. (Author) (See also PB 152 661)

PB 163 007 OTS $10.10

McGill U. (Canada).
OPERATION HAZEN: THE VEGETATION AND MICRO-CLIMATE OF THE LAKE HAZEN AREA, NORTHERN ELLESMERE ISLAND, N. W. T., by J. M. Powell. Jan 61, 125p. 114 refs. Rept. no. no. DPhysR(G) Hazen 14; Arctic Meteorology Research Group Pub. in Meteorology no. 38; AD-254 316.

DESCRIPTORS: Climatic factors, *Lakes, Plants, Canada, Soils, Climate, Rock, *Geology, Glaciers.

The research was carried out as part of the Canadian Defence Research Board's expedition to the Lake Hazen region in northern Ellesmere Island during the International Geophysical Year (1957 - 58). The main aim of the study is to discuss the relationship between climate and vegetation in the area. The first part deals with the macroclimate, the microclimate and the soil climate of the Lake Hazen region. An attempt is made to discover whether the period covered by the observations was typical for the area. The over-all effect of the climate on the vegetation is reviewed, with special reference to the varying distribution of plants. The continental climate of Lake Hazen was found to be more favourable for plant growth than that of nearby coastal areas, while the great variation in the vegetation sites was governed by a combination of factors, of which temperature, exposure and soil moisture were the most important. (Author)

PB 155 585 OTS $4.60

New York U. Coll. of Engineering, N. Y.
THE SEA BREEZE PROJECT, by Edwin L. Fisher. Final rept. 15 June 58-15 Sep 59, on Contract DA 36-039-sc-78091. [1959] 43p. 16 refs. AD-230 542.

DESCRIPTORS: *Sea breeze, Meteorological data, Non linera differential equations, *Marine meteorology, Model tests

A numerical model of the sea breeze is devised which includes the effects of heat diffusion, friction, and the rotation of the earth. The results of the computations reveal a sea breeze which compares favorably in many characteristics with the sea breeze as observed. (Author)

ENGINEERING

PB 162 786 OTS $12.00

[Arctic Construction and Frost Effects Lab.] Corps of Engineers, Waltham, Mass.
FROST INVESTIGATION, 1944-1945. Apr 47, 170p. 112 refs. Technical rept. no. 7.

DESCRIPTORS: *Permafrost, *Landing fields, *Pavements, Drainage, Soils, Traffic, Heat transfer, Moisture, Ice, Climatic factors.

The frost investigation program included studies at 15 airfields with varying subsurface conditions located in the northern part of the United States. The purpose of the investigation was to establish criteria and methods for the design of airfield pavements where conditions are conducive to frost action, both in theaters of operation and in the United States, and to establish criteria and methods for evaluation of airfield pavements where subgrade soils or base courses experience frost action. Extensive field laboratory tests were conducted together with theoretical and mathematical studies. Based upon the studies performed, a method of design of flexible and rigid pavements over subgrades susceptible to frost action has been included in the Ad Interim Engineering Manual as Part XII, Chapter 4, entitled "Frost Conditions, Airfield Pavement Design". The design is applicable for evaluation of airfield pavements where subgrade soils or base courses experience frost action. (Author)

ANL-6652 OTS $0.50

Argonne National Lab., Ill.
HELIUM-PURIFICATION UNIT FOR HIGH-PURITY INERT-ATMOSPHERE BOXES, by M. S. Foster, C. E. Johnson, and C. E. Crouthamel. Rept. on Contract W31-109-eng-38. Dec 62, 17p. NASA N63-12740.

PB 162 984 OTS $8.10

Navy Electronics Lab., San Diego, Calif.
THE POLAR SUBMARINE AND NAVIGATION OF THE ARCTIC OCEAN, by Waldo K. Lyon. 18 Nov 48, reissued 21 May 59, 89p. 18 refs. Research rept. no. 88.

DESCRIPTORS: *Submarines, *Polar regions, *Oceans, *Navigation, *Underwater navigation, Naval research, Operation, Ice, *Scanning sonar, Oceanographic data, Design, *Arctic regions

The report evaluates observations made on polar voyages up to and including 1948, and discusses the equipment and modifications needed to make a Fleet-type submarine suitable for under-ice research. (Author)

PB 162 803 OTS $2.60

St. Paul District, Corps of Engineers, Minn.
TREES OF INTERIOR ALASKA THEIR SIGNIFICANCE AS SOIL AND PERMAFROST INDICATORS, by E. G. Stoeckeler. Rept. on Investigation of Military Construction in Arctic and Subarctic Regions, 1952, 29p. 11 refs. ACFEL Technical rept. no. 39.

DESCRIPTORS: *Trees, *Soils, *Permafrost, Alaska, Plants, Moisture, Ecology, Water, Aerial photography, Growth, Climatic factors, Engineering personnel

The purpose of this paper is to aid soil survey crews in the field. It is intended that information contained in this handbook be useful both from the standpoint of agricultural and engineering surveys. Identification of the eight major species which attain tree size in the Permafrost Zone in Alaska is made easy by actual photographs illustrating tree form, branching habits, bark, leaves, and fruit. A brief discussion of the relative value of each of the eight species as an indicator of soil texture, ground water, and permafrost conditions is included.

Aeronautical Engineering

PB 162 973 OTS $6.60

Airborne Instruments Lab., Deer Park, N. Y.
ANALYSIS OF CONTROL-AREA WARNING DEVICE, by A. D. Mehall, F. B. Pogust, and L. G. Cole. Rept. on Contract FAA/BRD-362. Feb 62, 69p. 9 refs. Rept. no. 1155-1.

DESCRIPTORS: *Air traffic, *Control, Aircraft equipment, *Warning systems, Analysis, Economics, Feasibility studies.

A warning device is required to alert the pilot of a light aircraft when he penetrates a controlled airspace. The device must use airborne equipment of minimum complexity and cost but of high reliability. Visual and electromagnetic-radiation techniques considered as methods of marking this airspace are: (1) fan-shaped beams of

radiation to outline the perimeter of the controlled airspace--perimeter warning system; (2) rotating conical beams to completely blanket the desired airspace volume--volumetric warning system; and (3) ground markings to inform the pilot that he is entering or within a control area--visual warning system. Non-RF radiation (nuclear, infrared, and sonic) was found to be impractical for such applications. RF techniques using fixed- and/or scanning-antenna systems provide the best coverage. Visual techniques can be considered as auxiliary methods of control-area warning. The cost of producing equipments to provide the warnings are estimated. (Author)

PB 162 918 OTS $4.60

Airborne Instruments Lab., Deer Park, N. Y.
DEVELOPMENTAL ATC RADAR BEACON ALTITUDE TRANSMISSION EQUIPMENT (ATE), FAA/BRD TYPE 108-11-3, by E. F. Treanor. Final engineering rept. on Contract FAA/BRD-365. Nov 62, 46p.

DESCRIPTORS: *Air traffic control systems, *Radar beacons, *Altimeters, Barometers, Barometric pressure, Coding, Design.

The purpose of this equipment is to encode pressure altitude in 100-foot increments from -1000 to +50,000 feet for transmission to the ground by means of the ATC Radar Beacon System. The equipment characteristics, static system defect correction, and barometric altitude encoder accuracy are discussed. Recommendations for flight testing and equipment improvement are included. (Author)

PB 162 704 OTS $4.60

Bollay, E., Associates, Inc., Santa Barbara, Calif.
DIGEST OF ECONOMIC IMPACT OF WEATHER INFORMATION ON AVIATION OPERATIONS. Memorandum rept. on Contract FAA/BRD-410. Dec 62, 42p.

DESCRIPTORS: *Aeronautics, *Operations research, *All-weather aviation, Meteorology, *Economics.

This report includes estimates of the economic penalties to aviation caused by the lack of or inadequate weather information, the cost of implementing an improved weather system, the economic benefits that such a system would bring, and finally, the expected benefit-to-cost ratio. (Author)

PB 162 986 OTS $2.60

General Precision Lab., Inc., Pleasantville, N. Y.
IMPROVED CHARACTER SELECTION AND BEAM COMPENSATION AMPLIFIER FOR THE PLAN POSITION DATA DISPLAY, by W. E. Sallstrom and G. W. King. Final engineering rept. on Contract ARDS-462. 7 Sep 62, 24p.

DESCRIPTORS: *Display systems, *Plan position indicators, *Amplifiers, Design, Production, Tests, Aircraft equipment, *Control panels.

This report covers the design, fabrication, and in-plant testing of five (5) Improved Character Selection and Beam Compensation Amplifiers as described in FAA Engineering Requirement ER-370-034. Each amplifier is installed as a retrofit in a Plan Position Data Display Module. The amplifier is mechanically compatible with the PPDD Module, but necessitated minor modification to the rear control panel, in order to reduce drift caused by temperature change. The amplifier provides significantly improved linearity and stability of character selection and compensation, yet occupies no more chassis space than the original amplifiers. (Author)

PB 162 974 OTS $7.60

Hazeltine Technical Development Center, Inc., Indianapolis, Ind.
RADAR SCAN CONVERTER TV MARKER HANDOFF EQUIPMENT. Final engineering rept. on Contract FAA/BRD-342. 1 May 62, 71p. 3 refs. Rept. 6087.

DESCRIPTORS: *Air traffic control systems, Radar equipment, *Radar scanning, *Television display systems, Markers, Generators, Air traffic controllers, Control systems, Mixers (Electronic).

This report is the result of a design and development program directed toward Radar Scan Converter TV Marker Handoff Equipment. The equipment was designed to operate with all existing and future TV display systems presently on order by the Federal Aviation Agency. After factory and environmental testing, the Radar Scan Converter TV Marker Handoff Equipment was installed in a simulated TV display environment, where a thorough technical and operational evaluation occurred. The Radar Scan Converter TV Marker Handoff Equipment demonstrated exceptional reliability, and to a large extent, meets all specified performance requirements. Further discussions of these important items are enclosed herein. However, it would limit the controller range changing and off-centering capability of the future TV display systems. (Author)

PB 162 994 OTS $4.60

Institute of Flight Structures, Columbia U., New York.
THERMO-ELASTIC STRESSES AND DEFLECTIONS IN BEAM-COLUMNS, by Bruno A. Boley and Harold Mechanic. Rept. on Effects of Atomic Weapons on Aircraft, Contract AF 33(616)2071. Mar 54, 44p. 5 refs. Rept. no. CU-2-54-AF-2071-CE; WADC Technical rept. 54-425; AD-75 595.

DESCRIPTORS: *Aircraft, Structural parts, *Beams (Structures), *Nuclear explosion damage, *Thermal stresses, Elasticity, Deflection, Heating, Equations, Graphic analysis

Approximate equations for the calculation of the average deflections of axially unrestrained bars under the action of temperature are first developed. With the aid of these the behavior of heated beam-columns is taken up; the axial end load is introduced by considering the end points of the bar either elastically supported or fully restrained in the axial direction. A series of graphs is presented with the aid of which the end load under either of these conditions is readily calculated by a rapidly converging successive-approximations procedure. A detailed outline and an illustrative example of this procedure are included. The case of bars under the simultaneous action of a non-uniform temperature distribution and a transverse load is also considered. (Author)

PB 162 972 OTS $16.00

Laboratories for Research and Development, Franklin Inst., Philadelphia, Pa.
ECONOMIC FEASIBILITY STUDY: "FEDERAL ASSISTANCE TO GENERAL AVIATION", by D. Birx, R. Breuer and others. Final rept. on Contract FAA/BRD-375. July 62, 242p. 47 refs. Rept. no. F-B1841-1.

DESCRIPTORS: *Aeronautics, *Federal budgets, Operations research, *Economics, Feasibility studies.

This report is aimed at creating a methodology whereby the FAA can determine the willingness and ability of members of the general aviation group to equip themselves with various airborne electronic devices if and as the developing air traffic control system requires such equipment. Ways and means whereby the government can assist in reducing the private flier's financial burden in meeting future navigation and communications requirements are also discussed. In order to develop the theme of the report, a considerable portion of the text is devoted to the role of the government with respect to general aviation, the role of general aviation in the national aviation picture, and the position of the suppliers who cater to the electronic needs of general aviation. (Author)

PB 162 975 OTS $1.60

Link Div., General Precision, Inc., Binghamton, N.Y.
FEASIBILITY STUDY FOR A FOG SIMULATOR, PHASE III, by K. Jenkner. Rept. on Contract FAA/BRD-50. 30 Oct 61, 19p. Rept. no. ER317(Phase 3).

DESCRIPTORS: Feasibility studies, *Fog, *Simulation, Cockpits, Visibility.

This report is concerned with the development of a technique for controlled deposition of simulated fog particles on the plastic film to be used in the simulator. A successful method of utilizing clear lacquer deposited by air brush on mylar film is described. (Author)

PB 181 477 OTS $2.00

Matrix Corp., Arlington, Va.
A PRELIMINARY GENERAL AVIATION COCKPIT SYSTEM (PROJECT LITTLE GUY), by Leon T. Bonner, Jr., Edward C. Weiss, and Douglas Courtney. 15 Feb 63, 80p. 58 refs. Rept. no. 36-2.

DESCRIPTORS: *Civil aviation, *Aircraft cabins, Design, *Human engineering, *Flight instruments, *Instrument panels, Display systems, *Communication equipment, *Navigational aids, Flight control systems, *Cockpits

Project LITTLE GUY has as its purpose the development of a general aviation cockpit to meet the needs of the businessman pilot by bringing to bear on his requirements all of the most recent techniques in system analysis and design in the aviation field.

PB 162 878 OTS $6.60

National Aviation Facilities Experimental Center, Atlantic City, N. J.
EVALUATION OF GENERAL AVIATION TRANSPONDERS, by R. H. Boutillette, R. W. Delaney, and W. Herget. Interim rept. Nov 62, 65p. 2 refs. Proj. no. 108-8V.

DESCRIPTORS: Airborne, *Transponders, Aircraft equipment, Tests, Flight testing, Air traffic control systems, Radar beacons.

The acceptance tests consisted of bench tests on the ten transponders to determine contractor compliance with contract design specifications. Flight tests were conducted to determine maximum operational range of these GAT equipments at several flight altitudes, up to 15,500 feet, compatibility of the equipments with the Air Traffic Control Radar Beacon System (ATCRBS), and appearance of their return signal on Plan Position Indicator (PPI) displays. Results of the tests conducted thus far indicate that all equipments performed in accordance with the contract specifications. In addition, both theWilcox and Hazeltine transponders satisfactorily performed to a maximum range closely approximating radio line-of-sight and were compatible with the ATCRBS. (Author)

PB 162 965 OTS $4.60

National Aviation Facilities Experimental Center, Atlantic City, N. J.
EVALUATION OF THE COFFING THREE DIMENSIONAL GYROSCOPIC HORIZON DISPLAY, by Roger M. Hardwicke and Paul M. Rich. Final rept. Nov 62, 44p. 7 refs. Project no. 337-13V.

DESCRIPTORS: *Flight instruments, Gyroscopes, *Horizontal indicators, Gyro stabilizers, Display systems, Flight testing, Tests.

The Coffing three dimensional horizon instrument was evaluated to ascertain the value of this instrument to the VFR General Aviation Pilot. Test results indicated that noninstrument rated pilots made fewer control errors using the Coffing instrument, while instrument rated pilots interpreted the conventional horizon more rapidly. It was also found that, although the Coffing instrument provides a satisfactory coarse indication of aircraft attitude, it does not provide precise flight information. It was concluded that the Coffing instrument is of value to the VFR General Aviation Pilot when accidently entering instrument flight conditions and it is recommended that this instrument be used by this type of pilot. (Author)

PB 162 970 OTS $6.60

National Aviation Facilities Experimental Center, Atlantic City, N. J.
EVALUATION OF TWO MODIFIED TELETYPE 28 ASR FORMAT GENERATORS, by James F. Akers and Eldred C. Jones. Final rept. Apr 62, 67p. 12 refs. Proj. no. 104-614V.

DESCRIPTORS: *Air traffic control systems, *Data processing systems, *Teletype systems, Tests.

This report covers the test and evaluation of two modified Teletype 28 ASR Format Generators to determine the suitability of this equipment, both technically and operationally, for fulfilling the requirements for a remote facility on-line ATC computer input device. To provide a means of comparison, the tests were designed to parallel those conducted at an earlier date on the Aeronutronics FLIDEN and Model 28 ASR Programmatic equipments. Technical tests and evaluation were concerned mainly with investigations of the maintainability and availability of the modified Teletype 28 ASR Format Generator and performing final acceptance testing. In addition, tests were conducted to determine: (1) the adaptability of the equipment to serve as a device for receiving weather information, and (2) its ability to operate on a computer input circuit in parallel with other format generator(s).

PB 162 969 OTS $8.60

National Aviation Facilities Experimental Center, Atlantic City, N. J.
A SIMULATION STUDY OF AIRCRAFT PROFILE CONCEPTS IN DPC, by Howard F. Slattery, Richard Ohman and others. Interim rept. July 61, 92p. Task no. 105-6-5T.

DESCRIPTORS: *Aeronautics, Data, *Simulation, *Data processing systems, Air traffic, Control, Airplane landings, *Air traffic control systems.

The objectives of this task were to test, by simulation, the validity of aircraft performance profile concepts, as proposed for the DPC program, and their effect on the available airspace. Five simulation phases were planned in order to cover the broad scope of this task. In Phase 1A, the emphasis was on the metering of arriving aircraft through the transition area. In order to study this area, a transition radar console, a sequence console, and computer-generated tracking gates were simulated. The geography encompassed the New York Transition Sector 2. Phase 2, which dealt with path-stretch maneuvers, was conducted by analyzing and evaluating such maneuvers directly from the simulator pilots pictorial navigation display.

PB 162 968 OTS $3.60

National Aviation Facilities Experimental Center, Atlantic City, N. J.
TEST AND EVALUATION OF A RADAR PARAMETRIC AMPLIFIER, by William Herget. Final rept. May 62, 40p. 3 refs. Project no. 107-3V.

DESCRIPTORS: S-band, *Radar equipment, Airborne, *Parametric amplifiers, Amplifiers, Test methods, Model tests, Air traffic control systems,

An experimental Model of an S-band, one-port, semiconductor diode parametric amplifier, designed and manufactured by the Airborne Instruments Laboratory, was evaluated to determine its applicability for field use to improve reliability of detection of small targets. Laboratory tests were performed to measure the basic parameters of the amplifier, after which it was installed on the ASR-2 and flight tests were performed to evaluate the modified radar system. The laboratory tests included measurements of noise figure, gain, bandwidth, and gain stability. System tests provided data on reliability, effects of interference, relative increase in radar range and sensitivity, and MTI performance. The results were tabulated and presented in graphic and pictorial form. Analysis of data collected from these tests indicates that the parametric amplifier meets the development goals. (Author)

PB 162 993 OTS $7.60

New York U. Coll. of Engineering, N. Y.
LIFE EXPECTANCY OF AIRCRAFT UNDER ELEVATED TEMPERATURE CONDITIONS, by George Gerard. Rept. on Life Expectancy Analysis of Structural Elements at Elevated Temperature, Contract AF 33(616)301. Oct 53, 72p. 58 refs. WADC Technical rept. 53-493; AD-28 358.

DESCRIPTORS: *Aircraft, Structural parts, *Aerodynamic heating, Weight, Analysis, Stresses, Loading (Mechanics), *Creep, Theory, Bibliographies, Life expectancy.

A discussion is given of certain new structural problems which result from flight of aircraft under variable stress and elevated temperature conditions arising from aerodynamic heating. Information is included on environmental conditions, aircraft growth trends, weight criteria, relative weight trends, operational aspects, creep under variable stress and temperature conditions, creep under constant load and temperature conditions, air loading conditions, and life expectancy analysis. A brief bibliography is given on basic creep data, stress-strain-temperature-time relations, and aircraft operating conditions. A summary of each paper is included. (ASTIA abstract)

PB 162 705 OTS $3.60

United Research, Inc., Cambridge, Mass.
DIGEST OF ECONOMIC CRITERIA FOR FEDERAL AVIATION EXPENDITURES, by Fred Bohner. Memorandum rept. on Contract FAA/BRD-355. Sep 62, 39p. 4 refs.

DESCRIPTORS: *Aeronautics, *Federal budgets, Civil aviation, *Economics, Operations research.

Chapter I of the report -- Summary and Conclusions -- has been transcribed in its entirety; the remaining ten chapters have been abstracted. Many of the conclusions presented in the digest were abstracted from the context of a broad and comprehensive discussion of a particular subject. (See also PB 162 706)

PB 162 706 OTS $17.00

United Research Inc., Cambridge, Mass.
ECONOMIC CRITERIA FOR FEDERAL AVIATION AGENCY EXPENDITURES, by Gary Fromm. Final rept. on Contract FAA/BRD-355. June 62, 263p. 243 refs.

DESCRIPTORS: *Aeronautics, *Federal budgets, Operations research, *Economics, Civil aviation.

The purpose of this study was to determine certain broad principles and economic criteria for Federal Aviation Agency expenditures in order to enable the

Agency to establish specific standards and techniques for evaluating over-all and particular research and development, investment, and operating programs commensurate with the nation's future requirements and capabilities. In addition, these criteria were to be applied to the current aviation support system and a measurement taken of the present and future benefits of improving Federal Aviation Agency effectiveness.

Civil Engineering

PB 162 794 OTS $13.50

American Geographical Society, New York.
COMPILATION AND STUDY OF ICE THICKNESSES IN THE NORTHERN HEMISPHERE, 1952-1953, by Theodore Ryder. Rept. on Investigation of Construction and Maintenance of Airdromes on Ice, Fiscal Year 1954, Contract DA 19-016-eng-2313. June 54, 193p. 660 refs. ACFEL Technical rept. no. 47.

DESCRIPTORS: *Landing fields, Construction, Maintenance, *Ice, Thickness, Measurement, Statistical data, Bibliographies.

PB 162 787 OTS $15.00

[Arctic Construction and Frost Effects Lab.] Corps of Engineers, Waltham, Mass.
FROST INVESTIGATION, 1944-1945; ADDENDUM NO. 1, 1945-1947. Oct 49, 223p. 28 refs. Technical rept. no. 24.

DESCRIPTORS: *Ice, Penetration, *Landing fields, *Pavements, *Soils, Moisture, Temperature, Thermal conductivity, Atmospheric precipitation.

A summary of the investigations and studies made during the period July 1945 through June 1947 with analyses of the results is presented in this addendum to the original report. Analyses are based on these additional data and the data presented in the original report; however, repetition of data contained in the original report has been avoided. (See also PB 162 786)

PB 162 800 OTS $8.10

[Arctic Construction] and Frost Effects Lab., Corps of Engineers, [Waltham] Mass.
INVESTIGATION OF CONSTRUCTION AND MAINTENANCE OF AIRDROMES ON ICE, FISCAL YEAR 1950; REPORT OF INVESTIGATIONS. June 50, 84p. 217 refs. Technical rept. no. 29.

DESCRIPTORS: *Arctic regions, Canada, Greenland, *Landing fields, Construction, Maintenance, *Ice, *Atmospheric precipitation, Thickness, *Maps, Bibliographies, Airports.

Maps were prepared showing snow and ice cover conditions in the Northern Hemisphere. The bibliography prepared for the 1946-47 Report of Investigations was expanded. Liaison was maintained with others working on related problems. A translation was made of a Russian symposium on the bearing capacity of ice, which summarizes Russian knowledge on this subject as of about 1946.

PB 162 801 OTS $9.60

[Arctic Construction] and Frost Effects Lab., Corps of Engineers, [Waltham] Mass.
REPORT OF LANDINGS ON ICE FOR PROJECT RE-SUPPLY 1950 RESOLUTE BAY PHASE. Rept. for 29 Mar-8 Apr 50, on Investigation of Construction and Maintenance of Airdromes on Ice, 1949-1950. June 50, declassified, 113p. 3 refs. Technical rept. no. 30.

DESCRIPTORS: *Arctic regions, Canada, *Landing fields, Construction, Maintenance, Logistics, *Supply depots, *Landings, *Ice, Loading (Mechanics), Tensile properties, Boreholes.

The purposes of this investigation were to observe actual landings of heavy wheeled aircraft on ice in the Arctic, to observe construction and maintenance of airfields on ice, to obtain knowledge concerning (a) snow and ice conditions, (b) the characteristics of experimental and test equipment, and (c) the engineering services required in connection with operations of planes from ice surfaces, and to give technical aid where desired. (Author)

PB 162 788 OTS $9.60

Arctic Construction and Frost Effects Lab., Corps of Engineers [Waltham] Mass.
RIGID PAVEMENT PUMPING EXPERIENCE. Rept. for 1952-1953, on Frost Investigations, Fiscal Year 1953. Sep 54, 119p. 16 refs. Technical rept. no. 51.

DESCRIPTORS: *Pavements, Concrete, *Roads, *Runways, *Soils, Ice, Drainage.

The purpose of the investigation is to provide information which will either substantiate or serve as a basis for revising existing Corps of Engineers criteria for base courses between rigid pavements and frost-susceptible subgrade soils. The information in general indicated an advantage in the use of a properly graded filter course between a rigid pavement and fine-grained frost-susceptible subgrade soils. It was not possible, from the information obtained, to define clearly pumping or non-pumping conditions because of a general lack of pertinent soils data and traffic and behavior records.

PB 181 133 (Rev.) OTS $2.75

Bureau of Yards and Docks, Washington, D. C.
WHARFBUILDING HANDBOOK. Engineered Performance Standards, Public Works Maintenance. Jan 63, 145p. NAVDOCKS P-7150.0, supersedes NAVDOCKS P-715 dated Feb 61.

DESCRIPTORS: *Handbooks, *Piers, Construction, *Job analysis.

PB 162 793 OTS $1.60

Heat Measurement Lab., Mass. Inst. of Tech., Cambridge.
THE EFFECT OF FREEZING-THAWING CYCLES ON THERMISTOR CALIBRATION, by John N. Clark, J. Alan Spahr, and Robert A. Hindle. Rept. for 1 July 55-30 June 56, on Contract DA 19-016-eng-4010. June 60, 14p. ACFEL Technical rept. no. 72.

DESCRIPTORS: *Soils, Moisture, Freezing, Melting, Periodic variations, *Thermistors, Calibration

Laboratory tests are described wherein three soil-moisture units containing thermistors and five exposed disc-type thermistors were imbedded in moist soil and subjected to 20 freeze-thaw cycles. Thermistor resistance at the ice point was determined at the end of 1, 5, 10, 15, and 20 cycles for each unit and compared with initial readings. From the temperature-resistance relations, less than 0.1°F. change in calibration was observed at the end of 20 cycles for the thermistors contained in the soil-moisture units while changes for the exposed disc-type thermistors ranged from 0.19 to 3.56°F. All thermistors showed accelerated deterioration in their original ice-point calibration at 20 cycles. (Author)

PB 162 804 OTS $9.60

Massachusetts Inst. of Tech., Cambridge.
ANALYTICAL STUDIES OF FREEZING AND THAWING OF SOILS, by Harl P. Aldrich, Jr. and Henry M. Paynter. Interim rept. no. 1 (Final), on Frost Investigations, Fiscal Year 1953, Contract DA 19-016-eng-2314. June 53, 120p. 28 refs. ACFEL Technical rept. no. 42.

DESCRIPTORS: *Soils, Freezing, Melting, Analysis, *Ice, Penetration, Statistical data, Tables.

This report contains the results of studies related to the prediction of the frost penetration depth below ground surfaces. In addition, the so-called thaw-consolidation problem has been studied and the results are reported.

PB 162 790 OTS $3.60

Massachusetts Inst. of Tech., Cambridge.
ELECTRICAL ANALOG STUDY OF ERRORS IN GROUND TEMPERATURE MEASUREMENT, by James P. Cunningham and Warren M. Rohsenow. Rept. for 1 July 56-30 June 57, on Contract DA 19-016-eng-4666. Apr 60, 35p. 3 refs. Technical rept. no. 70; AD-238 361.

DESCRIPTORS: *Temperature sensitive elements, *Soils, *Snow, *Ice, *Temperature, Heat transfer, Errors, Measurement, Analog computers.

This report covers an investigation or errors inherent in the measuring of temperatures in the ground using temperature-sensing devices attached to a conducting probe inserted vertically in the ground (snow, ice, or soil). Of particular interest is the use of a standard copper-rubber cable. Analogue computer results are presented with ground materials of light snow, heavy snow, and ice, with cables 4.5 ft and 7.5 ft long. Errors are measured 16 hours after immersion of the probe, when a quasi-steady state is reached. The errors occurring with uniform temperature gradients in the ground, at least 1 ft to 1.5 ft from either end of the cable, are shown to be equivalent to an error in depth of less than 1 in. in light snow, and less than 1/8 in. in heavy snow and more conductive grounds. An approximate analytical solution is given and compared with the computer solutions. (Author)

PB 162 792 OTS $5.60

Purdue Research Foundation [Lafayette, Ind.]
PAVEMENT PROFILE AND ROUGHNESS MEASUREMENTS (A REVIEW OF METHODS), by E. J. Yoder and Delon Hampton. Rept. on Contract DA 19-016-eng-2625. June 60, 51p. 48 refs. ACFEL Technical rept. no. 73; AD-238 364.

DESCRIPTORS: *Pavements, Surface properties, Measurement, Instrumentation, Trafficability, Configuration, Runways, Test equipment, Test methods.

The various techniques which may be adopted for measuring pavement profiles and pavement roughness are discussed and evaluated. A summary bibliography of available pertinent literature is included. Detailed descriptions of some of these techniques, and abstracts of several articles appearing in the literature, are given. The basic requirements for profile and roughness measurements include mobility, rugged construction, accuracy of measurement, and usability of data. Since none of the instruments reviewed are completely satisfactory, a recommended device is outlined and discussed.

PB 162 796 OTS $11.50

St. Paul District, Corps of Engineers, Minn.
INVESTIGATION OF MILITARY CONSTRUCTION IN ARCTIC AND SUBARCTIC REGIONS, 1945-1948. Comprehensive rept. June 50, declassified. 154p. 18 refs. ACFEL Technical rept. no. 28.

DESCRIPTORS: *Arctic regions, Alaska, *Military facilities, *Landing fields, Runways, Construction, *Meteorological data, Weather stations, *Soils, Thermal conductivity, *Heat transfer, Moisture, *Thermal insulation, Concrete, *Geophysical prospecting, Aerial reconnaissance, *Permafrost.

The problems of location, design, construction and maintenance of military airfields and other engineering works in arctic and subarctic regions are peculiar to those regions. The purpose of this investigation is to determine the methods and procedure to be used in the solution of these problems. Observations of existing structures have been made at various airfields in Alaska since 1945, and additional test structures were constructed near Fairbanks in 1946 and 1947 on which observations are being made. The observations have resulted in the formulation of certain conclusions regarding the structures tested. Laboratory research has been carried on at the University of Minnesota to determine the thermal properties of soils and certain insulating materials. Purdue University has been engaged in developing procedures for locating permafrost and determining the kind of arctic and subarctic soils from aerial photographs. Library research is being conducted to locate and translate, where necessary, literature pertaining to permafrost.

PB 162 797 OTS $7.60

St. Paul District, Corps of Engineers, Minn.
INVESTIGATION OF MILITARY CONSTRUCTION IN ARCTIC AND SUBARCTIC REGIONS, 1945-1948. APPENDIX I: AIRFIELD SITE STUDIES AT NORTHWAY AIRFIELD, ALASKA. Comprehensive rept. June 50, declassified, 78p. Technical rept. no. 28-1.

DESCRIPTORS: *Arctic regions, Alaska, *Military facilities, *Landing fields, Runways, Structures, Construction, *Meteorological data, *Soils, Boreholes, Temperature, *Permafrost.

(See also PB 162 796)

PB 162 798 OTS $13.00

St. Paul District,Corps of Engineers, Minn.
INVESTIGATION OF MILITARY CONSTRUCTION IN ARCTIC AND SUBARCTIC REGIONS, 1945-1948. APPENDIX II: LIBRARY RESEARCH. Comprehensive rept. June 50 declassified. 182p. 1000 refs. ACFEL Technical rept. no. 28-2

DESCRIPTORS: *Arctic regions, *Military facilities, Construction, *Bibliographies, *Permafrost, Landing fields, Structures, Drainage, Boreholes, Vehicles, Lubrication, Plants, Geology, Geophysical prospecting, Heat, Ice, Thermal insulation, Maps. Mining engineering, Navy, Physics, Chemistry, Railroads, Refrigeration, Roads, Sewage, Soils, Hydrology, Meterology.

(See also PB 162 797)

PB 162 799 OTS $10.10

St. Paul District, Corps of Engineers, Minn.
INVESTIGATION OF MILITARY CONSTRUCTION IN ARCTIC AND SUBARCTIC REGIONS, 1945-1948. APPENDIX III: DESIGN AND CONSTRUCTION STUDIE AT FAIRBANKS RESEARCH AREA. Comprehensive rept. June 50, declassified, 126p. ACFEL Technical rept. no. 28-3.

DESCRIPTORS: *Arctic regions, Alaska, *Military facilities, Design, Construction, *Soils, Temperature, Moisture, Density, Boreholes, *Permafrost, *Pavements, *Runways, *Foundations (Structures). Structures.

Contents:
Ground and pavement surface studies
Runway foundation studies
Building and piling studies
(See also PB 162 798)

AD-276 374 OTS $10.50

Stanford U., Calif.
A NON-COMPUTER APPROACH TO THE CRITICAL PATH METHOD FOR THE CONSTRUCTION INDUSTRY, by John W. Fondahl. 2nd Edition. Technical rept. no. 9 on Contract NBy-17798. 2nd ed. Nov 61, 133p. 66 refs.

DESCRIPTORS: *Construction, Civil engineering, *Management engineering, *Operations research, *Sequential analysis, *Scheduling, Control, Costs, Time, Installation.

The Critical Path Method for planning, scheduling, and control of project operations is a new and useful tool now becoming available to the construction industry. Successful applications have already proven its value. To date, except for the simplest of cases, the use of this technique has been largely dependent on programmed solutions by electronic computers. This report presents the mechanics of noncomputer methods for applying the Critical Path Method.

Electrical and Electronic Engineering

PB 162 999 OTS $6.60

Airborne Instruments Lab., Inc., [Mineola,] N. Y.
INVESTIGATION OF MULTIBEAM ANTENNAS AND WIDE-ANGLE OPTICS, by Lorne K. DeSize, David J. Owen, and George E. Skahill. Final rept. on Contract AF 30 (602)1980. Jan 60, 66p. 10 refs. Rept. no. 7358-1; RADC-TR-60-93; AD-237 854.

DESCRIPTORS: Guided missile tracking systems, Optical tracking, *Radar antennas, Design; Antenna radiation patterns, Optical equipment, Electronic scanners.

An investigation has been conducted to determine the performance of a Cassegrain system as a multifeed, wide-angle, scanning antenna. The phase fronts for off-axis feeds as a function of effective focal length of the Cassegrain system have been computed on a computer and solutions for the diffraction patterns of a circular Cassegrain system as a function of the amount of comatic aberration and aperture blocking have been obtained. Experimental radiation patterns, on models with a 4-foot aperture, have been measured at a frequency of 17 kmc as a function of the displacement of the feed from the off-axis position. Reducing the side lobes that are due to aperture blocking by serrating the secondary reflector has been considered both on a theoretical and an experimental basis. The design parameters for a Cassegrain system having a ten-beamwidth scan have been suggested. (Author)

ANL-6634 OTS $1.25

Argonne National Lab., Ill.
TUNNEL DIODE CIRCUIT ANALYSIS, by Ronald G. Roddick. Rept. on Contract W31-109-eng-38. Oct 62, 50p. 12 refs. NASA N63-12344.

PB 163 006 OTS $6.60

[Army Electronics Research and Development Lab.] Fort Monmouth, N. J.
EXPERIMENTAL 12 CHANNEL PCM SYSTEM FOR CABLE, by S. D. Bedrosian, W. J. Lyons, Jr. and M. Weinstock. 28 June 54, 70p. 15 refs. Technical memo. no. M-1591; AD-44 546.

DESCRIPTORS: *Pulse modulation, *Coding, *Multichannel telephone systems, Multiplex, Telephone equipment, *Pulse cables.

The objective was to assess the feasibility and practicability of utilizing PCM techniques in a multichannel cable system. A 12-channel system was selected as a reasonable compromise between the technical factors of many channels and many repeater sections and the logistical factors of size, weight, and complexity. The decision to experiment with a 12-channel system avoids the requirement for coaxial cable. Spiral 4 cable cable assembly CX-1065/G, was selected. Binary coding was chosen since it was more efficient than the higher order codes and does not require complete pulse regeneration at each repeater point. The 6-digit code which appeared capable of providing a good quality channel requires a top frequency of 576 kc which represents about 15% reduction compared to 7-digit

transmission. An additional factor favoring its use is that service test models operate on a 6-digit system. The feed-back method using conventional circuitry was adopted for the coding and decoding technique. In order to study the transmission of PCM signals over cable, equipment was designed to simulate the transmitting portion of both a PCM simulator and an actual 12-channel PCM terminal. Several design problems associated with signal coding still remain unsolved. (ASTIA abstract)

PB 162 991 OTS $5.60

Cannon Electric Co., Los Angeles, Calif.
SEALED RACK AND PANEL CONNECTOR INCORPORATING FILTER CAPACITORS, by W. C. W. Duncan. Final technical rept. 15 Feb 59-2 June 60, on Contract DA 36-039-sc-78287. [1960] 59p.

DESCRIPTORS: *Electric connectors, Design, Structural shells, Aluminum alloys, *Nickel plating, *Corrosion, *Electric insulation, Plastics, Synthetic rubber, *Capacitors, Seals (Stoppers)

This report covers design and development of an 18-contact sealed rack and panel connector with 2000 mmf filter capacitors incorporated in each pin contact. Selection of connector design and materials, capacitor type, and satisfactory grounding method is described. Development of the sealing system, locking device, and endbells is also described. Tests were conducted to determine qualification to SCL-6003B (controlling specification). Connectors passed all tests except corrosion. Failure was attributed to inability of nickel plate to withstand corrosion. At the present time nickel is the only available finish capable of meeting electrical and physical requirements.

PB 153 429 OTS $4.60

Columbia Radiation Lab., New York.
RESEARCH INVESTIGATION DIRECTED TOWARD EXTENDING THE USEFUL RANGE OF THE ELECTROMAGNETIC SPECTRUM, by R. Novick. Quarterly progress rept. no. 3, 16 July-15 Sep 60, on Contract DA 36-039-sc-78330. 15 Sep 60, 49p. 11 refs. Rept. no. CU-9-60 SC-78330 Physics; AD-247 273.

DESCRIPTORS: *Microwave amplifiers, *Paramagnetic crystals, Radio astronomy, *Electromagnetic waves, Solar atmosphere, Cosmic rays, Infrared radiation, *Molecular beams, Hyperfine structures, Cadmium, Oxygen, Nitrogen, Magnetrons, Cerenkov radiation, Microwave equipment, *Masers.

A number of experiments are described dealing with the design of masers, and with the application of masers to physical and astronomic problems. A new technique for measuring paramagnetic relaxation times, and studies of stressed paramagnetic crystals are discussed. A 21 cm radioastronomy maser system was installed at the Naval Research Laboratory and is in use. The M-band radiotelescope is near completion and will be used to study sextuply ionized nitrogen in the sun's atmosphere as well as the oxygen content of the upper earth's atmosphere. A charged particle detector was constructed which displays glow discharges along the tracks of cosmic ray particles in a microwave cavity. Various molecular beam experiments, including measurement of the hyperfine structure of Kr^{83}, work on the metastable hydrogen atom, determination of the spin of O^{15}, and molecular velocity selection are described. An optical double resonance experiment has been transferred to this laboratory. (Author) (See also PB 150 166)

PB 154 902 OTS $4.60

Columbia Radiation Lab., New York.
RESEARCH INVESTIGATION DIRECTED TOWARD EXTENDING THE USEFUL RANGE OF THE ELECTROMAGNETIC SPECTRUM, by R. Novick. Quarterly progress rept. no. 4, 16 Sep-15 Dec 60, on Contract DA 36-039-sc-78330. 15 Dec 60, 47p. 18 refs. Rept. no. CU-12-60 SC-78330 Physics, AD-251 220.

DESCRIPTORS: *Magnetrons, *Microwave amplifiers, *Microwave spectroscopy, Hyperfine structure, *Microwave equipment, Optical equipment, Infrared equipment, Free radicals, Crystals, Superconductors, Atoms, *Molecular beams, *Masers.

Progress in the production of 2.6 mm magnetrons is described. A detailed description of several maser projects and paramagnetic resonance experiments is given; in particular, molecular beam spectroscopy, the measurement of relaxation times at low temperatures, and a new 'double maser' technique for increasing spectrometer sensitivity. A preliminary value for the dipole moment of the OH radical is reported. Data taken at the Naval Observatory with a 21 cm maser radioastronomy system is being analyzed. Optical oscillation of a pulsed ruby maser was observed. A number of projects involving atomic beams are described, including the measurement of hyperfine transition of Kr^{83}. A new experiment was undertaken to study the interaction between a beam of neutral atoms and a plane conducting surface. Several optical double resonance experiments are described, including the measurement of the spin and moments of Cd^{109}. A new type of paramagnetic spectrometer with optical detection, capable of extreme sensitivity, is under construction. (Author) (See also PB 153 429)

PB 155 110 OTS $1.60

Coordinated Science Lab., U. of Illinois, Urbana
G.S.F. STORAGE TUBES, by R. D. Rawcliffe. Final rept. on Contract DA 36-039-sc-85122. 23 Feb 61, 20p. 15 refs. Rept. R-123; AD-251 896.

DESCRIPTORS: *Storage tubes, Photomultipliers, *Data processing systems, Electron beams, Video integration, Targets, Aging, Cathode ray tubes.

Using a TCM-17 tube with appropriate external circuitry it is possible to store a charge which is proportional ($\pm 3\%$) to the integrated input. The readout, however, is nonlinear. The problem of obtaining a linear readout was not attempted. It appears to be much more difficult than the problem of obtaining a linear write. A tube whose readout is proportional to integrated input would have a number of useful applications. (Author)

AD-281 631 OTS $8.60

Duro-Test Corp., North Bergen, N. J.
RESEARCH AND DEVELOPMENT ON ULTRA HIGH BRIGHTNESS XENON LIGHT SOURCES, by W. E. Thouret and H. S. Strauss. Comprehensive final rept. 18 Mar 59-18 June 60, on Contract DA 44-009-eng-3834. 4 Nov 60, 94p. 3 refs.

DESCRIPTORS: *Xenon lamps, Light, Sources, Design, Electric arcs.

The principal purpose of the work has been exploration of the possibilities of making xenon short arc lamps in the 2KW power category capable of direct operation from 28 volts d.c. with horizontally elongated source shape. Under the given conditions, such source dimensions can only be obtained with several very short arcs burning vertically in parallel circuits from electrically separated cathodes to one common anode. Therefore, experimentation with and development of multiple arc xenon lamps for low voltage d.c. operation was the main aim of the contract work.

PB 162 983 OTS $2.60

Electronics Research Lab., U. of California, Berkeley.
ENERGY OPTIMAL CONTROL FOR PULSE AMPLITUDE MODULATED LINEAR TIME-INVARIANT SAMPLED-DATA SYSTEM, by C. Lee and C. A. Desoer. Rept. on National Science Foundation Grant no. G-15965. 7 Apr 62, 27p. 5 refs. IER series no. 60, Issue no. 447.

DESCRIPTORS: *Energy, Control, Pulse modulation, Amplitude modulation, *Linear systems, Time, Data, Sampling, Satellites (Artificial), *Control systems, Synthesis.

This paper presents a complete derivation of an optimal strategy of energy controls for linear time invariant systems. The proposed strategies are applicable to all the systems described when three assumptions are satisfied. All concepts used in the derivations follow closely the methods proposed by Desoer and Wing in the minimal time regulator problems. If an initial state is far from the origin and the inputs are bounded, then the strategy is not as elegant as in the case of the minimal time problem because a complete sequence of optimal controls must be obtained before the first input may be applied. But once the sequence is obtained the system can be driven without further computations unless the system is disturbed. (Author)

PB 162 964 OTS $5.60

Federal Aviation Agency, Washington, D. C.
AIR TRAFFIC CONTROL SYSTEMS COSTS. Memo. rept. June 62, 51p. 1 ref.

DESCRIPTORS: *Air traffic control systems, Costs, Installation, Maintenance, Operation, Economics.

This report contains information on the estimated costs for the establishment, maintenance and operation of ATC Systems, Subsystems, facilities, and equipment. It is intended to provide guidance to SRDS personnel engaged in the planning, development, testing and selection of new ATC systems and subsystems.

NASA N63-13101 OTS $0.50

Goddard Space Flight Center, National Aeronautics and Space Administration, Greenbelt, Md.
A MAGNETIC CORE VOLTAGE-TO-FREQUENCY CONVERTER, by Stephen Paull. Feb 63, 17p. 2 refs. Technical note D-1677.

PB 163 009 OTS $2.60

IBM Federal Systems Div., Owego, N. Y.
STUDY OF EFFECT OF HIGH-INTENSITY PULSED NUCLEAR RADIATION ON ELECTRONIC PARTS AND MATERIALS. Quarterly progress rept. no. 1, 1 July-30 Sep 60, on Contract DA 36-039-sc-85395. [1960] 21p. IBM no. 60-511-13; AD-247 366.

DESCRIPTORS: *Memory devices, *Radiation damage, *Ferrite cores, Test methods, Electronic circuits, Magnesium compounds, Manganese compounds, Copper compounds, Electronic equipment.

The effects of high-intensity pulsed nuclear radiation exposure on selected parts and materials used in critical high-speed electronic circuitry is investigated. A summary of the plans and experimental procedures which will be carried out at Los Alamos is presented. Plans were made to subject memory core circuits to GODIVA's nuclear environment. Circuits were designed, data recording methods were defined and prepared.

PB 163 010 OTS $5.60

IBM Federal Systems Div., Owego, N. Y.
STUDY OF EFFECT OF HIGH-INTENSITY PULSED NUCLEAR RADIATION ON ELECTRONIC PARTS AND MATERIALS. Quarterly progress rept. no. 2, 1 Oct-31 Dec 60, on Contract DA 36-039-sc-85395. [1961] 53p. IBM no. 61 521-1; AD-252 023.

DESCRIPTORS: *Memory devices, *Ferrite cores, *Radiation damage, Magnesium compounds, Manganese compounds, Copper compounds, Test methods, Tests, *Electronic equipment, *Gamma rays, Neutrons, *Electronic circuits, Radiation effects.

Various current pulse tests were conducted on ferrite memory cores while these cores were exposed to pulses of nuclear radiation from a GODIVA assembly. In all tests, except a disturb test, no radiation effects were detected. The disturb test results were inconsistent; therefore additional measurements are needed to determine if irradiation affects the disturb sensitivity of memory cores. Static tests have shown that information stored in memory cores and on magnetic tape was not affected by GODIVA radiation. (Author) (See also PB 163 009)

AD-273 701 OTS $4.60

IBM Federal Systems Div., Owego, N. Y.
STUDY OF EFFECT OF HIGH-INTENSITY PULSED NUCLEAR RADIATION ON ELECTRONIC PARTS AND MATERIALS. Quarterly progress rept. no. 6, 1 Oct-31 Dec 61, on Contract DA 36-039-sc-85395. [1962] 42p. 1 ref. IBM no. 62-521-3.

DESCRIPTORS: *Electronic equipment, Dielectrics, *Radiation damage, *Glass, Capacitors, *Radioactivity, Research reactors, Instrumentation, Dosimeters, Phosphors, Phototubes, Oscilloscopes, Cameras.

The effects of nuclear radiation on the electrical properties of glass were investigated. The dependence of efficiency on the dose rate, the dose, the external environment of the capacitor, and the capacitor geometry is presented. The implications of these results, as related to the possible mechanisms involved in the production of electrical current, are discussed. (Author) (See also PB 163 010)

PB 163 005 OTS $13.00

Inland Testing Labs., Morton Grove, Ill.
EXTENDED LIFE TEST ON PAPER MYLAR CAPACITORS, by John L. McGee. Final rept., vol. 1 on Electronic Parts Evaluation, Contract DA 36-039-sc-85271, continuation of Contract DA 36-039-sc-73060. Aug 60, 190p. AD-242 871.

DESCRIPTORS: *Paper capacitors, Capacitors, *Dielectrics, Tests, Electrostatic capacitance, Voltage, Electric insulation, Stresses, Temperature.

A reliability study program was conducted which involved the testing of over 12,000 paper-mylar capacitors conforming to Specification MIL-C-14157. Nearly all of these units were subjected to life tests extending 16,000 hours under a variety of test conditions. Results specifically validate the theoretical concept of a "bathtub" plot of failure rate vs. time for component parts. This concept, involving the existence of infant mortality, random failure, and wearout regions in time, previously could be embraced with confidence only for complex equipments; its extension to component parts enhances the usefulness of the most popular statistical and mathematical models for reliability interactions. A section on interpretation of parameter-drift data is included.

NASA N63-14070 OTS $3.60

Rensselaer Polytechnic Inst., Troy, N. Y.
A DIGITAL ORTHOGONAL MODEL FOR NONLINEAR PROCESSES WITH TWO-LEVEL INPUTS, by Rob Roy and Paul M. DeRusso. Rept. on Grant NsG-244-62. [1962] 34p. 19 refs.

PB 158 596 OTS $8.10

Stanford Electronics Labs., Stanford U., Calif.
ELECTRON DEVICES RESEARCH. Consolidated quarterly status rept. no. 16, 1 Oct-31 Dec 60, on Contracts DA 36-039-sc-73178, AF 33(616)6207, AF 19(604)5480, AF 49(638)660, Nonr-225(40), and Nonr-225(24). [1961] 85p. 29 refs. AD-253 135.

DESCRIPTORS: *Electron tubes, *Microwaves, *Plasma physics, *Microwave amplifiers, *Amplifiers, Broadband, *Semiconductors, Mathematical analysis, *Electron beams, *Electron guns, Noise (Radio), *Electric filters, *Traveling wave tubes, Backward wave amplifiers, *Superregeneration, Spin, Ferromagnetic materials, Paramagnetic resonance, *Masers, Parametric amplifiers

Contents:
Current flow in plasmas, Depressed collector, Stationary non-equilibrium plasmas, Conductivity measurements on a current-carrying plasma, Ion and plasma beam sources, Harmonic pumping in maser materials, Broadband maser amplifiers, Theoretical studies of solid state masers, General microwave device studies, Transverse-wave electron beam tubes, CW optical maser development, Optical maser development, Solid-state masers, Superregeneration in parametric amplifiers, Investigation of noise in electron guns, Parametric amplifiers, Microwave phonons in solids, Electron beam parametric amplifier, Noise studies, Hollow-beam electrostatic focusing, Plasma backward-wave parametric amplifier, Ferrimagnetic filters and resonators, Study of high-power hollow-beam traveling-wave amplifiers. (See also PB 157 371)

PB 153 727 OTS $8.60

Stanford Electronics Labs., Stanford U., Calif.
A MULTIPLE-INPUT TRAVELING-WAVE-TUBE PHASE SHIFTER, by L. D. Buchmiller. Rept. on Contract DA 36-039-sc-78296. 10 Oct 60, 92p. 27 refs. Technical rept. no. 558-1; AD-248 377.

DESCRIPTORS: Broadband, Helixes, Design, Electronic scanners, Electron tubes, Electronic equipment, Phase measurement, *Phase shifters, S band, *Traveling wave tubes.

The investigation is presented of the use of modified traveling-wave tubes as electronic phase-shifters. The tubes are modified by the addition of several inputs spaced equally along the length of the tube. The relative phase between adjacent inputs is varied by modulating the dc helix voltage. This work resulted in the development of a six-input S-band tube capable of producing plus or minus 180 degree phase shift between adjacent inputs separated by two inches. The beam-voltage modulation required to produce plus or minus 180 degree phase shift is plus or minus 35 volts at 3 kmc. The accompanying inherent gain variation is approximately 6 db for this voltage variation. Application of the tube to rapid electronic scanning of a linear receiving antenna array was demonstrated in laboratory experiments. The chief advantages of the phase-shifting tube are ease of modulation and the capability of rapid scan. Typically, direction of arrival can be determined within one microsecond. (Author)

PB 149 834 OTS $11.00

Stanford Electronics Labs., Stanford U., Calif.
OPTIMAL DESIGN OF MULTI-STAGE TUNED-TRANSISTOR AMPLIFIERS CONSIDERING GAIN, STABILITY AND SENSITIVITY, by B. P. Lathi. Rept. on Contract DA 36-039-sc-78296. 11 July 60, 148p. 30 refs. Technical rept. no. 1603-1; AD-240 842.

DESCRIPTORS: *Amplifiers, *Transistors, Stability, Design, Mathematical analysis, Circuits, Sensitivity

Efforts were principally concerned with developing simplified and convenient design procedures for single-stage and multi-stage amplifiers using either inherently stable or potentially unstable devices. The most important contributions of these efforts were (1) extension of the stability criterion to a multi-stage amplifier, (2) the presentation of the conditions leading to simultaneous optimization of sensitivity, gain and stability margin, and (3)

cedure for single-stage as well as multistage amplifiers employing either inherently stable or potentially unstable devices. The design problem was considered from 3 important aspects, viz., sensitivity, stability and gain. The relationships between stability margin, gain and sensitivity are pointed out. It was shown that the manner in which a given stability margin is provided is very important from the standpoint of sensitivity. The method of design to achieve the optimal value of sensitivity to changes in critical device parameters for a specified stability margin was developed. (Author)

PB 152 627 OTS $1.10

Stanford Electronics Labs., Stanford U., Calif.
ZERO-POINT ENERGY AS THE FUNDAMENTAL SOURCE OF AMPLIFIER NOISE, by A. E. Siegman. Rept. on Contract DA 36-039-sc-73178. 10 Oct 60, 8p. 8 refs. Technical rept. no. 155-4; AD-244 951.

DESCRIPTORS: *Microwave amplifiers, *Noise (Radio), Sources, Quantum mechanics, Energy, Mathematical analysis, Masers

The well-known expression for maser amplifier noise figure is here derived in a new way, using the concept of zero-point energy rather than of spontaneous emission. This derivation leads to the rather different interpretation that amplifier noise is caused not by any noise generation mechanism inside an amplifier, but rather by the amplifier's insistence upon amplifying zero-point energy and, in fact, doing so with higher gain than it does the signal. (Author)

Ordnance, Missiles, and Satellite Vehicles

NASA N63-13096 OTS $6.00

Goddard Space Flight Center, National Aeronautics and Space Administration, Greenbelt, Md.
EARTH-REFLECTED SOLAR RADIATION INCIDENT UPON SPHERICAL SATELLITES IN GENERAL ELLIPTICAL ORBITS, by F. G. Cunningham. Feb 63, 440p. 3 refs. Technical note D-1472.

NASA N63-13097 OTS $0.75

Goddard Space Flight Center, National Aeronautics and Space Administration, Greenbelt, Md.
A PRECISION ENDLESS-LOOP MAGNETIC TAPE RECORDER FOR SPACE APPLICATIONS, by R. C. Falwell, K. W. Stark, and A. F. White. Feb 63, 20p. 3 refs. Technical note D-1542.

NASA N63-13099 OTS $1.00

Langley Research Center, National Aeronautics and Space Administration, Langley Station, Va.
EQUATIONS FOR DETERMINING VEHICLE POSITION IN EARTH-MOON SPACE FROM SIMULTANEOUS ONBOARD OPTICAL MEASUREMENTS, by Alton P. Mayo, Harold A. Hamer, and Margery E. Hannah. Feb 63, 33p. 4 refs. Technical note D-1604.

NASA N63-12950 OTS $0.75

Langley Research Center, National Aeronautics and Space Administration, Langley Station, Va.
PRESSURE DISTRIBUTIONS OVER THE FORWARD PORTION OF THE PROJECT FIRE SPACE-VEHICLE CONFIGURATION AT MACH NUMBERS FROM 0.25 TO 0.60, by William P. Henderson. Feb 63, 28p. Technical note D-1612.

AD-293 846 repriced OTS $0.75

Naval Ordnance Lab., White Oak, Md.
CHARACTERIZATION OF SQUIB MK 1 MOD 0; SENSITIVITY TO 9KMC RADAR IMPULSES, by I. Kabik and C. Goode. 31 Aug 62, 30p. 17 refs. Rept. no. NOLTR 62-77.

DESCRIPTORS: *Electric detonators, *Electric igniters *Radar pulses, Waveguides, Radar equipment, Tests, Test methods, Ignition, Detonation, Temperature, Simulation, Attenuation, High frequency, Radiofrequency attenuators, Radar signals, Test equipment, Sensitivity.

Mk 1 Mod 0 Squibs were fired in the wave guide of a 9kmc radar. For fully loaded squibs, on the basis of previous tests at dc to 5 megacycles, the bridgewire in the 9kmc tests did not reach the temperature expected necessary for firing. Squibs without cup or base charge approximated the expected firing temperature. From the results it is inferred that squib simulators used to predict firing on the basis of bridgewire temperature may not be applicable at frequencies as high as 9kmc. It is also hypothesized that the powder charges in some devices may act as attenuators somewhat reducing the probability of firing in high frequency rf fields. (Author)

AD-294 985 repriced OTS $0.75

Naval Ordnance Lab., White Oak, Md.
EXPLOSIONS IN VACUUM, by Morton Lutzky. 15 Jan 62, pub. Nov 62, 29p. 8 refs. Rept. no. NOLTR 62-19; NASA N63-12199.

DESCRIPTORS: *Explosions, *Pentolite, Digital computers, Density, Energy, Measurement, Detonation, Gases, Impact shock, Tests, Targets, Pressure, Equations of state, Vacuum apparatus, Explosives, Vacuum systems.

The results of an IBM-704 machine calculation of the explosion of a 1-lb. charge of pentolite in vacuum and the expansion of the detonation product gases to strike a concentric rigid spherical target are reported. Alternative equations of state were employed in the calculation (ideal gas with constant gamma, and ideal gas with variable gamma) and the results compared. Plots are given of pressure and energy density, versus distance, at various times after the wall was struck, and pressure-time histories of the gas at the wall. Representative values for the peak wall pressure at various distances from the center, for the constant gamma case, are 22,712 Bars at 8.0 cms., 805.6 Bars at 24.0 cms., and 5.37 Bars at 128.4 cms. Scaling to other distances and charge weights is considered. A 512-lb pentolite charge, for example, is shown to produce a pressure of 145 psi at the wall some 26 ft away. Such a pressure, if applied to a spacecraft, would probably destroy it. (Author)

AD-295 152 repriced OTS $0.75

Naval Ordnance Lab., White Oak, Md.
LIQUID MODEL STUDIES OF THE BASE SURGE, by E. Swift, Jr. 1 Oct 62, 27p. 7 refs. Rept. no. NOLTR 62-191.

DESCRIPTORS: *Underwater explosions, Nuclear explosions, Model tests, Scale, Correlation techniques, Mathematical analysis, Equations, Photographs, Tests, Test methods, Test facilities, Nuclear weapons, Simulation.

When a constrained column of dense liquid standing on the bottom of a tank of water is released suddenly, it sinks and flows outward radially along the bottom. This action simulates the early motion of the base surge from shallow underwater explosions. Such liquid model experiments are described, scaling laws are derived, and comparisons with CROSSROADS Baker are made. It is estimated that between 100,000 and 130,000 tons of water in the Baker column contributed to the surge, that the column height was between 3500 and 4000 feet, and that the column density was between 1.4 and 1.6 times that of air. (Author)

AD-293 494 repriced OTS $1.00

Naval Ordnance Lab., White Oak, Md.
MIGRATION OF EXPLOSIVE BUBBLES IN A ROTATING TEST TANK, by Hans G. Snay. Oct 62, 38p. 12 refs. Rept. no. NOLTR 61-145.

DESCRIPTORS: *Bubbles, *Underwater explosions, Gravity, Migration area, Centrifuges, Integral equations, Differential equations, Test methods, Theory, *Explosion bubbles.

The upward migration of pulsating explosion bubbles under the influence of buoyancy (gravity) cannot be studied on a model scale in free water, but only in test tanks. If a stationary test tank is employed the air pressure above the water surface must be reduced to assure similitude. Another alternative, namely a tank which is subjected to a suitably selected acceleration during the explosion test is discussed. The case considered is that where the acceleration is produced by a centrifuge. The Coriolis accelerations distort the motions of the migrating bubble in two ways. First, the 'upward' (i.e. toward the water surface) motion of the bubble is deflected to the side. The sideward motion can be observed experimentally. In the second place, the rotation affects the magnitude of the 'upward' motion and introduces a systematic error which cannot be detected by experimental methods. The bubble migration in a rotating system is treated using the simplifying assumption that the bubble retains its spherical shape. The 'upward' as well as sideward migration is calculated for the first and second cycle of the pulsation. The systematic error in the 'upward' migration was about 1%, which is probably less than the experimental accuracy of such studies. (Author)

AD-296 424 repriced OTS $1.00

Naval Ordnance Lab., White Oak, Md.
UNDERWATER EXPLOSION PHENOMENA: THE PARAMETERS OF MIGRATING BUBBLES, by Hans G. Snay. 12 Oct 62, pub. Dec 62, 33p. 10 refs. NAVORD rept. 4185; NASA N63-13085.

DESCRIPTORS: *Explosion bubbles, *Underwater explosions, Gravity, Buoyancy, Energy, Analysis, Oscillation, Hydrodynamics, Equations, Mathematical analysis, Migration area, Bubbles.

The migration of underwater explosion bubbles caused by gravity (buoyancy) affects the energy of the pulsation as well as period and maximum radius in the second and subsequent cycles. Experimental data on periods of explosions in various depths are analyzed, and the bubble energy is determined for five cycles of the oscillation as a function of the strength of migration. The result is given in dimensionless form which permits the calculation of periods, maximum radii, and migration for a wide range of conditions. An energy balance shows the surprising result that the bubble energy of the second cycle increases with increasing intensity of migration until a maximum is reached at a condition of strong migration. Beyond this point, the energy decreases again. This gain is found to be due to the decrease of the energy radiated by the bubble pulse. (Author)

UCRL-13054 OTS $5.60

Zimney Corp., Monrovia, Calif.
FEASIBILITY STUDY OF ROCKET AND LAUNCHING SYSTEMS FOR PARTICULATE SAMPLING OF CLOUDS, by A. G. McLaughlin, Fred S. Soltis, and Bruce R. Walker. 30 Sep 62, 60p. 5 refs. TR 62-1065-2.

Sanitation and Safety Engineering

PB 162 997 OTS $1.10

Denver Research Inst., Colo.
INVESTIGATION OF NEW METHODS OF AIR PURIFICATION, by Thomas D. Nevens. Monthly progress rept. no. 1 on Contract DA 18-108-cml-5456. 13 July 54, declassified 16 June 57, 10p. AD-227 772.

DESCRIPTORS: *Atmospheric pollution, Decontamination, Purification, *Chemical warfare agents, *Biological warfare agents, Poisonous gases, Aerosols, Pyrolysis, Chemical reactions.

Study was initiated of new methods of removing toxic impurities from air. The methods to be investigated are: pyrolysis, chemical reactions, absorption and adsorption, liquefaction, filtration, static precipitation, centrifuging, thermal diffusion, gaseous diffusion, mass diffusion, catalysis, sonics, and uv light techniques. Emphasis will be given to pyrolysis techniques employing Royster-type pebble beds which would preheat the air to about 500°C, then quench it. Liquid scrubbing or adsorption might be used to remove toxic decomposition products. Pyrolysis could be used to decompose gases, aerosols, and microorganisms. Complexing, neutralizing, and coagulating the agents by chemical reactions, charged particles, or enzyme-containing aerosols will also be emphasized. (ASTIA abstract)

PB 162 996 OTS $3.60

Waterbury Companies, Inc., Conn.
PRODUCTION TECHNIQUES FOR FABRICATING E8R1 GAS-AEROSOL FILTER ELEMENTS, by J. F. Culhane and G. R. Wilson, Jr. Final rept. Mar 56-July 59, on Contract DA 18-108-cml-5990. 31 July 59, 32p. AD-227 217.

DESCRIPTORS: *Air-intake filters, *Gas masks, Production, Design, Materials, Costs, *Aerosols, Gases.

A description is presented of the materials, methods, and tools employed in the fabrication of E8R1 gas-aerosol filter elements for use in the E13R10 (M17) field protective mask. The E8R1 filter element consists of 2 pieces of special gas-aerosol filter material which are formed and cut into approximately spherical triangles. Consideration was given to filter blanks, protective screens, spacer, stiffener, connector shell, connector shell sub-assembly, spacer sub-assembly, final die cutting, and molding edge seal. (ASTIA abstract)

FOOD, HANDLING, AND PACKAGING EQUIPMENT

Food

PB 162 477 OTS $2.60

American Can Co., Barrington, Ill.
CORROSION STUDIES OF IRRADIATED CANNED FOODS, by G. B. Pratt. Rept. no. 6 (Final) 17 Dec 54-31 Dec 60. [1960] 23p. File no. S-700.

DESCRIPTORS: Radiation effects, *Corrosion inhibition Vegetables, *Food, *Containers, *Tin

The objective of this study is to provide information on the relative corrosiveness of radiation-sterilized foods, as compared with conventional thermally processed foods in tinplate cans. Green beans were chosen as an example of a detinning food product which is reported to suffer relatively little radiation off-flavor. In addition, information was sought to determine whether a sterilizing radiation dose would produce a noticeable effect on the materials of the container or their performance. This includes, in addition to tinplate cans packed with green beans, various materials packed with beef, cherries and chili con carne. An exploration of observed gas production during irradiation in cans of food was also undertaken. (Author)

PB 162 476 OTS $2.60

American Crystal Sugar Co., Denver, Colo.
IRRADIATION ON INOCULATED SAMPLES OF SUGAR AND ON REGULAR PRODUCTION SAMPLES FROM SELECTED PLANTS, by J. L. Porterfield. Rept. no. 2 (Final), 19 Jan 56-1 Sep 57, on Irradiation of Standard Granulated White Sugar for Bacteria and Mold Sterilization. [1957] 21p. File no. 710.

DESCRIPTORS: *Radiation effects, *Saccharides, Carbohydrates, Decontamination, Microorganisms, Dosage, *Food, *Preservation

A general range of white sugar samples were inoculated with thermophilic bacteria commonly found in sugar, another with mesophilic bacteria, and another with coliform bacteria. The above samples were irradiated in 1956 at ranges from 1,000,000 on up to 2,250,000 reps, or 930,000 to 2,092,500 rads. The irradiation was very effective in that it destroyed the thermophiles, mesophiles, coliforms, yeasts and molds, but due to some unknown reason the irradiation turned all samples a dark color and also imparted a strong caramelized odor and flavor. It was agreed that a second set of samples would be prepared and submitted for irradiation at dosages ranging between 150,000 and 3,000,000 reps, or 139,500 and 2,790,000 rads. The second set of samples included inoculated as well as non-inoculated sugar, and all samples contained an excessive number of microorganisms. (Author)

PB 162 475 OTS $1.10

American Cyanamid Co., Stamford, Conn.
USE OF ANTIBIOTICS AND/OR CHEMICAL ADDITIVES IN COMBINATION WITH RADIATION TO PRESERVE FRESH MEAT ITEMS, by Walter L. Clark. Rept. no. 1 (Final), 1 Dec 57-1 Dec 58. [1958] 9p. File no. S-738.

DESCRIPTORS: *Antibiotics,*Additives, *Tetracyclines, *Radiation effects, *Preservation, *Meat, Food

The purpose in these studies was to determine low level radiation (0.1 to 0.2 megarads) effects on (1) chlortetracycline (CTC) solutions, in the presence and absence of proteins, oxygen and nitrogen, (2) chlortetracycline in the "dry" state and, (3) the changes which occur in flora of irradiated beef when it is treated with CTC.

PB 162 474 OTS $8.10

Armour and Co., Chicago, Ill.
USE OF ANTIBIOTICS AND/OR CHEMICAL ADDITIVES IN COMBINATION WITH RADIATION TO PRESERVE FRESH MEAT ITEMS. PHASE I: STUDIES INVOLVING RADIATION AND ANTIBIOTIC AND CHEMICALS. PHASE II: EFFECT OF RADIATION ON THE SHELF LIFE AND ACCEPTABILITY OF MEAT ITEMS, by C. K. Wiesman. Rept. no. 13 (Final), 11 Apr 56-10 Apr 62 [1962] 86p. File no. S-712.

DESCRIPTORS: *Antibiotics, *Additives, *Radiation effects, *Preservation, *Meat, Pork, Beef, Storage, Taste, Acceptability, Food.

The flavor of fresh ground beef is sensitive to the action of irradiation. Chicken parts given pasteurization doses of radiation (650,000 to 2,000,000 rads) in combination with an aureomycin dip treatment were held at 40°F. to study shelf life extension. No noticeable off flavors were produced with the dosage used, nor did off odors develop during storage. Taste panel studies indicated that although the increase in radiation dose increased the shelf life of precooked beef steaks, a definite flavor disadvantage was noted in the samples which received an 80,000 rad dose. The shelf life of pre-cooked pork sausage links irradiated at 550,000, 650,000, and 750,000 rads was found to be in excess of 10 weeks. Pasteurization of suitable products by means of irradiation offers possibilities for increasing the shelf life of these products.

PB 162 473 OTS $1.60

California Packing Corp., San Francisco.
RADIATION PRESERVATION OF CANNED FRUITS AND VEGETABLES, by R. A. Gillies. Rept. no. 8 (Final), 7 May 57-7 May 61, on Radiation Studies on Fruits and Vegetables. [1961] 11p. 2 refs. File no S-741.

DESCRIPTORS: *Radiation effects, *Preservation, *Fruits, Apricots, *Vegetables, Containers, Decontamination, Food.

Packaged dried prunes and apricots were subjected to radiation doses of 0.1 to 2.0 Mrad. From the examination of these samples it was found that the acceptability of the prunes and apricots which received 0.5 Mrad or less were all similar to the nonirradiated control fruit. From the inoculated series of fruit it would appear that a radiation dose of 0.5 Mrad would be sufficient to prevent spoilage by yeasts and molds. Insects,

larvae, etc., would be destroyed at much lower doses and thus would not be a problem. After exposure to a radiation dose of 1.0 Mrad the dried fruits had a slight off-flavor and off-odor. At radiation doses over 1.0 Mrad the color, texture, odor, and appearance of the fruit were generally not acceptable. (Author)

PB 162 472 OTS $1.10

Dewey and Almy Chemical Co., Cambridge, Mass.
EFFECT OF RADIATION ON THE PHYSICAL PROPERTIES AND THE SEALING OF CANS, by J. H. Brillinger, W. A. Kalber, and A. J. Leydon. Rept. no. 2 (Final), 1 Nov 56-30 July 58. [1958] 3p. File no S-728.

DESCRIPTORS: *Radiation effects, *Containers, Physical properties, *Seals, *Vacuum seals, Food, Rubber seals.

A study of the effect of ionizing radiation up to 5.6 Megarad on the physical properties of a variety of can sealing compounds has shown that: Compounds based on unvulcanized butadiene-styrene rubber, butadiene-acrylonitrile rubber, or natural rubber are cross linked and toughened. Compounds based on neoprene or vulcanized rubber are not noticeably changed. Compounds based on butyl rubber are softened, apparently as a result of depolymerization. There is no measurable difference in the sealing performance of irradiated and non-irradiated cans as determined by vacuum retention. There is no measurable difference in sealing performance between cans irradiated by 2 Mev electrons and cans irradiated by gamma rays. (Author)

PB 162 471 OTS $1.10

Dubuque Packing Co., Iowa.
UTILIZATION OF RADIATION FOR INCREASED SHELF LIFE OF FRESH AND CANNED MEATS, by Don Manders. Rept. no. 2 (Final) 2 May 59-1 May 60. [1960] 5p. File no. S-751.

DESCRIPTORS: *Radiation effects, *Preservation, *Meat, Pork, Taste, Odors, Smokes, Containers

The purpose of this study is to try to come up with a canned ham which has been made shelf-stable by a combination of low-level radiation and pasteurizing heat. Radiation levels of 50,000 rad, 150,000 rad, and 250,000 rad were followed by cooking in 155 degrees F. water. Cured hams were used in the first test and the radiated samples were found to be unacceptable by a taste panel. Cured hams in the second test were subjected to an electronic smoke which would tend to mask "off" flavors and odors. The radiated samples in this group were given considerably higher test scores than in the first series, although not as high as those given the heat processed controls. Microbiological examination after 30 days of incubation showed that the radiated hams in several instances were far from sterile. Accordingly, tests in the future will concentrate on conventional smoke (which has better masking and preserving qualities than electronic smoke) and higher radiation and heat levels. (Author)

PB 162 481 OTS $1.10

Hormel, George, A. and Co., Austin, Minn.
IRRADIATION OF PORK SAUSAGE, ROAST BEEF, AND OTHER MEATS, by J. A. Zillgitt. Rept. no. 11 (Final), 19 June 56-18 June 59. [1959] 10p. File no. S-715.

DESCRIPTORS: *Radiation effects, *Meat, Pork, Processing, Beef, *Taste, *Preservation, Condiments, Plastics, Containers.

Packages fabricated from laminated polyethylene and cellophane or from an experimental fluoro carbon polymer are not satisfactory for irradiated meats. Pork sausage containing 0.25% glutamate and irradiated by a dose of 3 megarad was given a mean flavor rating of 6.5 on the hedonic scale by a preference panel. A roast beef with fairly satisfactory flavor was produced by searing all surfaces, seasoning with salt, pepper and glutamate, heat processing in a can to an inside temperature of 157°F., and irradiating with a dose of 2 megarad. Varying the sugar content from 0 to 1% and replacing it with sorbitol had little effect on the flavor of irradiated bacon.

PB 162 486 OTS $1.10

Hygrade Food Products Corp., Indianapolis, Ind.
UTILIZATION OF RADIATION FOR IMPROVEMENT OF QUALITY OF CANNED HAM AND COMMINUTED MEAT PRODUCTS, by V. R. Rupp. Rept. no. 2 (Final) 21 May 59-20 May 60, on Irradiation - Pasteurization of Canned Hams. [1960] 3p. File no. S-753.

DESCRIPTORS: *Radiation effects, *Meat, Pork, Decontamination, Odors, Taste, Refrigeration, Pasteurization, Food, Containers

Irradiated canned hams held for 10 months at 86°F showed no viable aerobic or anaerobic bacteria present. Similar samples held in a cooler at 32°F showed a noticeable off-odor of sufficient magnitude to make them unacceptable as a commercial product.

PB 162 482 OTS $1.10

International Salt Co., Inc., New York.
DISCOLORATION AND STERILIZATION OF SALT BY RADIATION TREATMENT, by Kurt Landenburg. Rept. no. 3 (Final) 29 Apr 57-28 Apr 59. [1959] 8p. 7 refs. File no. S-740.

DESCRIPTORS: *Discoloration, Purification, Impurities, Salts, *Radiation effects, *Sodium compounds, *Chlorides, Quantitative analysis, Light, Additives

Occasional reports have been received that salt exposed to sunlight exhibits darkening or discoloration on the surface. A thorough study was made of all possible causes, including the presence of iodine and trace elements in the salt as well as in commercial anticaking additives. Salt samples were exposed to sunlight, ultraviolet light, fluorescent, and incandescent light under a variety of conditions. No conclusive evidence was found that any of the above factors, by themselves or in combination, caused the discoloration of salt when exposed to light. (Author)

PB 162 484 OTS $1.10

Marshburn, Inc., Norwalk, Calif.
THE EFFECT OF RADIATION ON FRESH AND FROZEN VEGETABLES, by William C. Kuhn. Rept. no. 3 (Final), 25 Jan 57-24 Jan 58. [1958] 6p. File no. S-732.

DESCRIPTORS: *Radiation effects, *Vegetables, *Carrots, Freezing, *Preservation, *Frozen foods, Food

The originally-irradiated (sterilized) carrot juice has held up excellently in storage at room temperatures for a period of over a year showing no bacteria, no coliform or other breakdown over this long storage period.

PB 162 483 OTS $1.60

McCormick and Co., Inc., Baltimore, Md.
THE EFFECT OF IONIZING RADIATION ON SPICES, by R. L. Hall. Rept. no. 8 (Final), 26 Sep 55-25 Sep 58. [1958] 14p. File no. S-705.

DESCRIPTORS: *Radiation effects, *Condiments, Pork, Taste, Odors, Food, *Preservation, Insects, Decontamination.

Insect infestation can be eliminated in spice products by ionizing radiations. In practically every case, the irradiated spices examined in this report showed no evidence of live insects after three months incubation; this was at levels of 50,000 and 75,000 rep. When irradiated with 3×10^6 rep., no significant change in the character of the spice itself occurred, as measured by triangle comparisons using panel of about 20 members. None of the spices investigated, when combined in frankfurters and pork sausage and irradiated at 0.75 to 3.0×10^6 rep., showed any tendency to significantly mask or prevent ionized flavor and odor. In general, irradiation appears to reduce the odor and flavor of spices in pork sausage. (Author)

PB 162 327 OTS $1.10

Monsanto [Research Corp.] Springfield, Mass.
TO INVESTIGATE THE EFFECTS OF IONIZING RADIATION ON POLYSTYRENE AND OTHER PLASTICS ALONE AND IN CONJUNCTION WITH SIMULATED FOOD SYSTEMS, by Charles T. Hathaway. Rept. no. 6 (Final), 28 June 57-27 June 60, on Evaluation of Films for irradiation Packaging of Foods. [1960] 3p. File no. S-744.

DESCRIPTORS: *Radiation effects, *Styrene plastics, *Food, Preservation, Ionization, *Containers, *Plastics.

The ultimate goal of this program is determination of the suitability of various polymeric films for packaging use in irradiation preservation of foods. Work with oriented polystyrene films was terminated because of unsuitable barrier properties. Work on other, experimental, films is not sufficiently advanced to permit evaluation under irradiation conditions.

PB 162 485 OTS $1.10

Pet Milk Co., Greenville, Ill.
PRESERVATION OF EVAPORATED MILK BY IRRADIATION, by D. M. Graham. Rept. no. 5 (Final), 1 May 59-30 Apr 62, on The Effect of Reduced Oxygen Concentration Versus Irradiation Dosage on Evaporated Milk. [1962] 8p. File no. 747.

DESCRIPTORS: *Preservation, *Milk, Evaporation, *Radiation effects, Taste, Food.

Continuous flow of irradiated fluid milk at 3 to 4.5 megarad followed by immediate vacuum evaporation yielded 2 to 1 concentrated milk of good flavor, similar in acceptability to heat sterilized milk. Techniques are described for irradiation electron under a high energy electron beam. Stainless steel, glass, and aluminum exposure chambers were evaluated, favorable results obtained only with aluminum. A procedure is described for sterilizing the evaporator with Cryoxide gas prior to introduction of irradiated milk. (Author)

PB 162 466 OTS $1.10

Rath Packing Co., Waterloo, Iowa.
AGING OF MEAT BY IRRADIATION, by George Christianson. Rept. no. 3 (Final), 25 Oct 56-24 Oct 58. [1958] 6p. File no. S-729; AD-243 398.

DESCRIPTORS: Aging, *Meat, *Beef, *Radiation effects, Acceptability, Storage, Pork, Deterioration, Food.

Pasteurization irradiation of fresh beef, up to levels causing detectable flavor changes, did not extend refrigerated storage-stability sufficiently for commercial application. Although natural sheep and hog sausage casings were sterilized by high levels of irradiation, fresh pork sausages made with sterilized casings had a reduced refrigerated storage life when compared to untreated controls. (Author)

PB 162 489 OTS $1.10

Staley, A. E., Mfg. Co., Decatur, Ill.
EFFECT OF IONIZING RADIATIONS UPON SOY FLOUR, by C. E. Ireland. Rept. no. 1 (Final), 17 Aug 56-16 Aug 58. [1958] 5p. File no. S-725.

DESCRIPTORS: *Radiation effects, Ionization, *Flour, Corn, Beta particles, Gamma rays, Bacteria, Decontamination, *Taste, *Preservation, Food

Irradiation with beta or gamma rays at the 125,000-140,000 rad level can produce a thermophile free corn starch if the initial level is low (about 30 per 10 grams). At these dosages the flavor of the product is unaltered. The dosage required to produce a thermophile free soyflour is just at a level (about 150,000 rads) at which a slight "cooked flavor" is imparted to the product. The initial thermophile count should not exceed about 300 per gram. At higher bacterial levels (about 2100 thermophiles per gram) a dose of 200,000 rads produced a 92% kill in the case of gamma irradiation and only a 66% kill in the case of beta irradiation. Since the data were quite limited the above results should not be considered final. (Author)

PB 162 491 OTS $1.10

Weiland Packing Co., Inc., Phoenixville, Pa.
EFFECTS OF IONIZING RADIATION OF FRANKFURTERS OF INCREASING SHELF LIFE IN COMBINATION WITH REFRIGERATION, by Jacqueline V. White. Rept. no. 2 (Final), 1 July 61-30 June 62, on Utilization of Radiation for Increasing the Shelf-Life of Comminuted Meat Products. [1962] 4p. File no S-755.

DESCRIPTORS: Ionization, *Meat, *Preservation, *Refrigeration systems, Odors, Plastics, Containers, *Radiation effects, Taste.

Low ionizing radiation will prolong shelf life of frankfurters in combination with normal refrigeration. Excessive use of highly spiced seasoning will not cover or prevent undesirable odors and taste caused by radiation. (Author)

MACHINERY, FABRICATION, AND ACCESSORY EQUIPMENT

Engines and Propulsion Systems

NASA N63-12763 OTS $2.60

Langley [Research Center, National Aeronautics and Space Administration] Langley [Station] Va.
THE EFFECT OF SEVERAL JET-ENGINE AIR-INLET CONFIGURATIONS ON THE LOW-SPEED STATIC LATERAL STABILITY CHARACTERISTICS OF A 1/6-SCALE MODEL OF THE MX-1764 AIRPLANE, by Delwin R. Croom. 4 Mar 54, declassified 14 Sep 62. 24p. 2 refs. Research memo. RM SL54C12.

NASA N63-12931 OTS $1.25

Lewis Research Center, National Aeronautics and Space Administration, Cleveland, Ohio.
EROSION RESISTANCE AND FAILURE MECHANISMS OF SEVERAL NOZZLE MATERIALS IN A SMALL SOLID-PROPELLANT ROCKET ENGINE, by Robert A. Signorelli and James R. Johnston. Feb 63, 49p. 16 refs. Technical note D-1658.

HW-SA-2533 OTS $1.60

Hanford Atomic Products Operation, Richland, Wash.
ESTIMATION OF DEFECT FREQUENCY IN MANUFACTURING PROCESSES, by A. D. Wiggins. Rept. on Contract AT(45-1)1350. 9 May 62, 11p. 1 ref.

PB 163 022 OTS $2.60

Naval Engineering Experiment Station, Annapolis, Md.
AN INVESTIGATION ON WATER AND STEAM LUBRICATING BEARINGS, by William J. Vitelozzi. 9 June 50, 25p. E. E. S. Test rept. C-3229-C; AD-147 283.

DESCRIPTORS: *Journal bearings, Design, Materials, *Carbon, Impregnation, Silver, *Lubrication, *Steam, *Water

This report covers the results of preliminary work in the development of journal bearings for service with steam or water lubrication. To date, various materials have performed satisfactorily with water lubrication. Under steam lubrication, however, only one class of bearing material, namely, silver impregnated carbon, has shown promise of staisfactory performance.

MATERIALS

PB 162 895 OTS $4.60

Aeronautical Materials Lab., Naval Air Material Center, Philadelphia, Pa.
THE DEVELOPMENT OF A NEW ANTIFOULING FINISH FOR AIRCRAFT HULLS, by Jack Ohr. Rept. on Proj. TED NAM AE 42154, pt. 4. 9 Sep 60, 49p. 11 refs. Rept. no. NAMC AML 1138; AD-245 365.

DESCRIPTORS: Flying boats, *Flying boat hulls, *Aircraft finishes, *Antifouling coatings, Aluminum, Mercury compounds, Chlorides, Toxicity, Effectiveness, Corrosion, Acrylic resins, Plastic coatings, Stresses.

The 38Q and 38R [plasticized acrylics containing high levels of HgCl] white antifouling coating systems are most promising for use as hull bottom-finishes on the basis of good antifouling properties, no corrosion to stressed aluminum, good coating characteristics, and resistance to aircraft fluids. Mercurous chloride in coatings does not appear to be corrosive to aluminum whereas red cuprous oxide, which is used as an antifouling toxic in the Bureau of Ships MIL-P-15931A coating and commonly used in commercial antifouling paints, is corrosive to aluminum. Mercurous chloride is the most effective antifouling toxic which can be used in the formulation of white coatings for aluminum. It appears that organic toxics are far less effective than mercurous chloride in providing antifouling resistance in coatings. Solvent removable antifouling coatings which may be applied directly over the standard aircraft lacquer are not practicable for use on hull bottoms since they are readily attacked by most aircraft fluids and oil slicks. Asphaltic and waxy type coatings, epoxy-versamids, and Teflon are not suitable vehicles for antifouling coatings. (Author)

PB 163 017 OTS $4.60

Army Chemical [Research and Development] Labs., Army Chemical Center, Md.
ANNUAL MATERIALS REVIEW (1956), by Arthur Lyem. Rept. for 1 July 56-15 Jan 57. 24 July 57, 43p. 123 refs. CWL Special pub. 4-1; AD-144 663.

DESCRIPTORS: *Materials, *Polymers, *Plastics, *Synthetic fibers, *Metals, *Alloys.

Information is presented regarding materials research principally in the plastic and resin fields. The following phases are stressed: (1) high polymers with emphasis on chemistry (including macromolecular chemistry), technology (including polymerization), and physical and chemical characteristics; (2) plastic materials of construction in relation to fabricating techniques, structural material types, and product behavior, nuclear aspects (radiological and thermal), medical and biological considerations, and industrial and military applications; (3) synthetic fibers with emphasis on manufacturing techniques, wet-processing (textiles), properties, and commercial applications; and (4) the various aspects of metals and alloys. (ASTIA abstract)

PB 163 018 OTS $3.60

Army [Chemical Research and Development] Labs., Army Chemical Center, Md.
SEMIANNUAL MATERIALS REVIEW (1 JANUARY-30 JUNE 1957), by Arthur Lyem. Dec 57, 40p. 153 refs. CWL Special pub. 4-2; AD-150 483.

DESCRIPTORS: *Materials, *Polymers, *Plastics, *Synthetic fibers, *Metals, *Alloys.

Literature surveys were made to obtain information on engineering materials including high polymers, plastic materials of construction, synthetic fibers, metals and alloys, and miscellaneous materials. Abstracts are given of the recent technological advancements cited in the literature. (ASTIA abstract) (See also PB 163 017)

HW-SA-2127 OTS $1.10

Hanford Atomic Products Operation, Richland, Wash.
A LOW COST METHOD FOR SHAKING DOWN COAL, by O. R. Harris. Rept. on Contract AT(45-1)1350. 1962. 4p.

NASA N63-12705 OTS $1.10

National Bureau of Standards, Washington, D. C.
STRESS RELAXATION OF FLUOROCARBON ELASTOMERS DURING GAMMA-IRRADIATION, by T. Yoshida, R. E. Florin, and L. A. Wall. Rept. on NASA Order R-56. [1962] 6p. 3 refs.

Adhesives and Sealants

PB 163 000 OTS $4.60

Armour Research Foundation, Chicago, Ill.
AN INVESTIGATION OF METAL-CERAMIC COMPOSITES FOR HIGH-TEMPERATURE APPLICATIONS, by N. M. Parikh and J. I. Fisher. Final rept. 14 Apr 59-14 Apr 60, on Contract DA 11-022-505-ORD-3038. 18 May 60, 44p. 2 refs. Rept. no. ARF 2175-12; AD-238 137.

DESCRIPTORS: *Heat resistant materials, *Composite materials, Ceramic materials, *Titanium compounds, Carbides, *Aluminum compounds, Oxides, Glass, Graphite, *Reinforcing materials, Metals, Fibers, *Molybdenum, *Tantalum, *Nickel, Shear stresses, Electrical conductance, Thermal expansion, Density, Fracture (Mechanics).

A few selected systems of the fiber metal reinforced-ceramic materials were investigated. The investigation included attempts to determine the nature and strength of the bond between metal and ceramics. Calculations of relevant values of residual thermal stresses were made from expansion measurements. Various properties of metal-fiber reinforced ceramics were measured and they appeared to be a direct function of the volume fraction of metal. These properties were also very sensitive to the direction from which test specimens were cut from the composites due to the anisotropy of metal distribution in the composites. These composites showed excellent thermal shock resistance from 1500°C. (Author) (See also PB 157 273)

PB 163 019 OTS $4.60

Armour Research Foundation, Chicago, Ill.
RESEARCH AND DEVELOPMENT SERVICES LEADING TO THE CONTROL OF ELECTRICAL PROPERTIES OF MATERIALS FOR HIGH TEMPERATURE RADOMES, by Leon M. Atlas and Hikaru Nagao. Rept. on Applied Research in Electrical, Electronic and Magnetic Materials, Contract AF 33(616)5929. Oct 60, 43p. 18 refs. WADC Technical rept. 59-300, Part II; AD-249 785.

DESCRIPTORS: *Radomes, *Heat resistant materials, Ceramic materials, Electrical properties, *Aluminum compounds, Oxides, Impurities, Silicon, Magnesium, Titanium, Calcium, Chromium, Iron

Multiple regression methods show that impurity ions may be grouped in the following order of decreasing effect on the loss tangent of alumina ceramics: Si, Mg, Ti, Ca, Cr, and Fe. Activation energies calculated at 500°C and 10^5 c/s correspond closely with the depths of traps at Si or Ti impurity sites. Polarization peaks in K" vs frequency curves have been used to estimate the mobility of charge carriers in a-alumina at 11 to 15 cm^2/volt sec. A self compensated dielectric containing 10% Ca TiO_3 and 90% Al_2O_3 has been prepared with a constant value of k' between 25 and 250°C. (Author) (See also PB 161 423)

GEMP-19A OTS $1.25

General Electric Co., Cincinnati.
HIGH-TEMPERATURE MATERIALS PROGRAM. Progress rept. no. 19, Part A. Rept. on Contract AT(40-1)2847. 25 Jan 63, 49p. 18 refs.

NASA N63-13183 OTS $1.00

Langley Research Center, National Aeronautics and Space Administration, Langley Station, Va.
TENSILE PROPERTIES AND SHEET-BENDING FATIGUE PROPERTIES OF SOME REFRACTORY METALS AT ROOM TEMPERATURE, by Lee R. Foster, Jr. and Bland A Stein. Jan 63, 32p. 5 refs. Technical note D-1592.

NASA N63-12926 OTS $1.00

Lewis Research Center, National Aeronautics and Space Administration, Cleveland, Ohio.
OBSERVATIONS OF PROPERTIES OF SINTERED WROUGHT TUNGSTEN SHEET AT VERY HIGH TEMPERATURES, by E. C. Sutherland and William D. Klopp. Feb 63, 41p. 9 refs. Technical note D-1310.

AD-297 939 repriced OTS $1.75

Mississippi State U., State College.
NONDESTRUCTIVE ANALYSIS OF THE BRITTLE FRACTURE BEHAVIOR OR CERAMIC MATERIALS, by Gary G. Paulson, Julian H. Lauchner and others. Final rept. 1 Sep 61-31 Aug 62, on Contract AF 33(616)7347. Nov 62, 67p. 11 refs. ASD-TR-61-436, Part 2.

DESCRIPTORS: *Ceramic materials, *Nondestructive testing, Impurities, Elasticity, Resonance, Vibration, Dielectric properties, Stresses, Mechanical properties, Diffusion, X-ray diffraction analysis, Thermal stresses, Thermal diffusion, Mathematical analysis, Fracture (Mechanics), *Brittleness, Refractory materials, Graphite

The first of this 3-part project was devoted to an experimental analysis of the possibility of applying certain physical principles toward development of a nondestructive test ror brittle materials, in which a technique called "diffusion doping" was studied as an aid in analyzing brittle fracture. Part II was theoretical. A one-dimensional heat conduction problem was solved by the LaPlace transformation method. The problem consisted of a symmetrical composite body of five slabs that was moved suddenly from one temperature environment at equilibrium to a second temperature environment. Constant thermal properties and constant surface coefficients were utilized, and equations that express the temperature as a function of time and position were presented. In Part III relations were derived for thermal stresses set up under the conditions described in Part II. No numerical answers were given, but the general systems of derived equations were utilized in indicating how the desired solutions could be obtained by digital computer techniques. (Author)

AD-282 164 OTS $2.60

[New Jersey Ceramic Research Station] Rutgers U., New Brunswick.
DEVELOPMENT OF REFRACTORY CERAMICS THAT CAN BE PROCESSED AT TEMPERATURES CONSIDERABLY LOWER THAN THEIR MAXIMUM USE TEMPERATURE, by Edward J. Smoke and John H. Koenig. Progress rept. no. 1, 1 Apr-1 July 62, on Contract NOw-62-0710-d. 1 July 62, 27p. NASA N62-14591.

DESCRIPTORS: *Radomes, *Refractory materials, Ceramic materials, Processing, Temperature, Heat treatment, *Aluminum compounds, Oxides, Density, Absorption, Sintering furnaces.

A systematic study has been initiated to determine the effects of presintering on the final fired properties of compositions in the system $MgO.Al_2O_3.SiO_2$. The presintering phase has been completed and the crystalline phases present, bulk density and moisture absorption are reported. High Alumina bodies in the Al_2O_3-MgO system will be investigated in order to determine the sintering characteristics of alumina. Samples have been prepared for this firing in a newly constructed sintering furnace capable of supporting various atmospheres. Preformance characteristics of the furnace are reported. (Author)

Plastics

PB 163 012 OTS $2.60

[Naval Ordnance Lab., White Oak, Md.
SURVEY OF RESEARCH ON FUNGI IN RELATION TO DETERIORATION OF PLASTICS, by G. M. Watkins. 30 July 47, 22p. 27 refs. Rept. no. NOLM 9180.

DESCRIPTORS: *Plastics, Deterioration, Inhibition, *Fungi, Fungicides, Bibliographies.

An account is given of research reported from various laboratories on the activities of fungi in connection with the deterioration of plastics. Various methods used to determine the ability of plastics to support mold growth, as well as procedures for evaluating the fungi-static properties of plastics containing toxicants are reviewed. Work reported from several institutions on assessment of the effects of fungous growth on the physical properties of plastics is discussed. Reports dealing with the relative susceptibility of different plastics to attack by fungi are summarized. There is a discussion and evaluation of measures thus far employed to prevent mold growth on plastics and conclusions are reached as to lines of research that appear to require further emphasis. (Author)

PB 162 887 OTS $4.60

Stanford Research Inst., Menlo Park, Calif.
EFFECT OF RADIATION ON THE MECHANICAL PROPERTIES OF PLASTICS, by David L. Chamberlain, Jr., Robert L. Walrath, and Vincent Salmon. Final rept. on Contract DA 04-200-ORD-698. 19 Feb 60, 50p. 5 refs. SRI Proj. no. SU-2296; AD-238 812.

DESCRIPTORS: Plastics, *Radiation effects, *Acrylic resins, *Polyethylene plastics, Annealing, Ultrasonics, Thermal radiation, Paramagnetic resonance, Mechanical properties, Elasticity.

Factors which contributed to erratic VIRA (vibrating reed apparatus) measurements included test temperature, irradiation conditions, and post-irradiation effect. The cavity molding technique was unsatisfactory for forming reeds of either polymethylmethacrylate (PMM) or of polyethylene (PE). The double-pressing technique gave the least strains and most uniformity of plastic sheets. The molecular weight decreased as the radiation dose increased. The degree of crosslinking increased with radiation dose, as expected. The dynamic elastic modulus data, as obtained from the VIRA equipment measurements, were generally erratic. The general trend was an increase in E" and E" up to a certain radiation dose, followed by a decline with continued irradiation. The vibrating reed apparatus is a useful means of evaluating irradiation effects in certain polymers when used in conjunction with chemical analysis and within its limitations. (See also PB 159 716)

MATHEMATICS

AD-296 795 repriced OTS $0.75

Naval Ordnance Lab., White Oak, Md.
A GENERALIZED BOUNDARY VALUE PROBLEM FOR $u_{xy}=f(x,y,u,u_x,u_y)$, by James Conlan. 17 Oct 62, pub. Nov 62, 23p. 5 refs. Rept. no. NOLTR 62-177; NASA N63-12736.

DESCRIPTORS: *Mathematics, Differential equations, Sequences, Functions, Inequalities, *Partial differential equations.

This paper proves an existence theorem for the partial differential equation $u_{xy}=f(x,y,u,u_x,u_y)$ with certain linear combinations of u, u_x and u_y given on two non characteristic curves. (Author)

BNL-757 OTS $0.50

Brookhaven National Lab., Upton, N. Y.
CONCERNING POLYNOMIALS ENCOUNTERED IN THE STUDY OF THE DISTRIBUTION FUNCTION OF SPACINGS, by L. D. Favro, P. B. Kahn, and M. L. Mehta. [Rept. on Contract AT(30-2)GEN-16] Sep 62, 6p. 7 refs. T-280; NASA N63-13552.

NASA N63-12608 OTS $8.60

Digital Systems Lab., Case Inst. of Tech., Cleveland, Ohio.
DIGITAL SERVO LOOP GAIN OPTIMIZATION FOR SECOND AND THIRD ORDER SYSTEMS, by Roy Waas. Rept. on Grant NsG 36-60. 1962, 100p. 4 refs. EDC rept. 1-62-10.

PB 157 804-32 OTS $6.60

Digital Systems Lab., Princeton U., N. J.
A PROGRAM FOR THE ANALYSIS OF DIGITAL SYSTEMS, by Herbert Schorr. Dec 62, 64p. 17 refs. Technical rept. no. 32.

DESCRIPTORS: *Digital computers, Computers, Language, *Programming languages, Machine translation, *Computer logic, Mathematical logic, *Algebras, Analysis, Synthesis

A digital computer can be represented by a set of Boolean equations. This set comprises its constructional description. A computer can also be thought of as a set of logically interconnected registers, where the information stored in registers can be transferred into certain other registers. These transfers of information can be described by a register tranfer language. A list of these transfers comprises the operational description of the digital system. Analysis is defined as the conversion of a constructional description of a digital system into its corresponding operational description. A syntax directed compiler program which converts a set of Boolean equations into a list of elementary register transfers is given. (Author)

PB 157 804-33 OTS $5.60

Digital Systems Lab., Princeton U., N. J.
REGISTER TRANSFER IN DIGITAL SYSTEMS, by Herbert Schorr. Dec 62, 60p. 20 refs. Technical rept. no. 33.

DESCRIPTORS: *Digital computers, Computers, *Computer systems components, *Computer storage devices, Input-output devices, Trigger circuits, Circuits, *Computer logic, *Algebras, Synthesis, Algorithms

A computer can be thought of as a set of logically interconnected registers that processes information while transferring it from register to register. Such a transfer of information is called a register transfer. In this report, registers and register transfers are defined in order to determine if a register transfer description of a digital system can be converted into Boolean equations (Author)

PB 157 804-31 OTS $8.10

Digital Systems Lab., Princeton U., N. J.
SYMBOL MANIPULATION BY RECURSION, by Herbert Schorr. Dec 62, 86p. 12 refs. Technical rept. no. 31.

DESCRIPTORS: Digital computers, Computers, Language, *Programming languages, *Computer logic, Mathematical logic, *Algebras, Special functions, Machine translation.

In this paper the use of a language originally developed to translate formal programming languages into machine language is extended. The language, which is Backus normal form as augmented by E. T. Irons, is used to execute various symbol manipulating functions. The collection and merging of strings is illustrated by several examples. In order to enhance the powers of the language several modifications of it are discussed. The corresponding changes necessary in the compiler (the computer implementation of the language) are also discussed. These changes increase the recursive power of the language. (Author)

PB 162 982 OTS $3.60

Electronic Defense Labs., Mountain View, Calif.
SIGNAL DETECTION BY FINITE CORRELATION, by Crosman Jay Clark. Rept. on Contract DA 36-039-sc-87475. 28 Sep 62, 40p. Technical memo. no. EDL-EDL-M489.

DESCRIPTORS: *Signals, *Detection, *Correlation techniques, Signal-to-noise ratio, Multiplex, Geometry, Propagation, *Analog computers, Computers

This study is motivated by a desire to obtain a theoretical formulation of the correlation process (called finite correlation) as done on the SIDAC, and, by using this formulation, to compare in a theoretical way the case of multiple path with multiple source. The theoretical formulation of the process of correlation as done on the SIDAC gives a means of determining the optimum information one could expect from the process. Using the general formulas developed one can study the output directly by examining the mathematical formulation, which may lead to new insights; or, using the expressions, one may calculate in a digital manner and therefore not be limited to the fixed accuracy of analog equipment.

PB 162 978 OTS $6.60

Princeton U., N. J.
COUNTABLE-BIT NOMOGRAPHIC ELECTRONIC COMPUTER, by Douglas P. Adams (Massachusetts Inst. of Tech.). 11 Feb 63, 69p. Technical Seminar Series rept. no. 5.

DESCRIPTORS: *Nomographs, *Digital computers, Computers, Computer logic, Memory devices, Computer storage devices, Circuits

Contents:
The nature of graphics
Noel
Computation organization
Some nomographic procedures and properties
Memory. The countable bit. Automatic correlation
Memory, its form and writing
Reading bit-memories. Several retrieval devices
Computer circuitry

MECHANICS

AD-279 565 OTS $5.60

David Taylor Model Basin, Washington, D. C.
ANALYSIS OF STRESSES IN AXISYMMETRIC SHELL STRUCTURES UTILIZING TOROIDAL SHELLS AS REINFORCING RINGS, by Richard V. Raetz. Jan 62, 58p. 11 refs. Rept. 1579.

DESCRIPTORS: *Cylindrical shells, *Stresses, Measurement, *Sandwich construction, Mathematical analysis.

An analysis of the elastic behavior of thin toroidal shells of circular cross section, having small ratios of meridional to circumferential radius of curvature and moderately small ratios of thickness to meridional radius of curvature, is developed. Axial symmetry of geometry and loading is assumed. The resulting equations are utilized in the analysis of stresses in a sandwich-type structure consisting of two coaxial cylindrical shells with tubular reinforcing elements and under external hydrostatic pressure loading. Theoretical strains for a model tested at the David Taylor Model Basin are computed and compared with measured strains, thus providing a limited check on the validity of the theory. (Author)

AD-297 935 repriced OTS $6.00

Diamond Ordnance Fuze Labs., Washington, D. C.
PROCEEDINGS OF THE FLUID AMPLIFICATION SYMPOSIUM SPONSORED BY THE DIAMOND ORDNANCE FUZE LABORATORIES, 2, 3, AND 4 OCTOBER 1962, VOLUME I. OCT 62, 478p. 129 refs.

DESCRIPTORS: *Conferences, *Fluid flow, Amplifiers, Compressible flow, Jet mixing flow, Jets, Turbulence, Pneumatic systems, Army research, Digital systems, Control systems.

Aerodynamics and Pneumatics

NASA N63-13100 OTS $2.00

Ames Research Center, National Aeronautics and Space Administration, Moffett Field, Calif.
AERODYNAMIC CHARACTERISTICS OF A LARGE-SCALE MODEL WITH TWO HIGH DISK-LOADING FANS MOUNTED IN THE WING, by David H. Hickey and Leo P. Hall. Feb 63, 79p. 6 refs. Technical note D-1650.

NASA N63-12912 OTS $1.25

Ames Research Center, National Aeronautics and Space Administration, Moffett Field, Calif.
AERODYNAMIC PERFORMANCE AND STATIC STABILITY AT MACH NUMBERS UP TO 5 OF TWO AIRPLANE CONFIGURATIONS WITH FAVORABLE LIFT INTERFERENCE, by David H. Dennis and Richard H. Petersen. Jan 59, declassified 5 June 62. 47p. 16 refs. Memo. 1-8-59A.

NASA N63-13913 OTS $4.60

Ames Research Center, National Aeronautics and Space Administration, Moffett Field, Calif.
SUBSONIC AERODYNAMIC CHARACTERISTICS OF DISK RE-ENTRY CONFIGURATIONS WITH ELLIPTIC CROSS SECTIONS AND THICKNESS-DIAMETER RATIOS OF 0.225 AND 0.325, by Fred A. Demele and Jack J. Brownson. May 61, declassified 1 Apr 63. 46p. 9 refs. Technical memo X-566.

NASA N63-13914 OTS $6.60

Ames Research Center, National Aeronautics and Space Administration, Moffett Field, Calif.
THE SUBSONIC AERODYNAMIC CHARACTERISTICS OF SOME BLUNT DELTA CONFIGURATIONS WITH 75° SWEEPBACK, by George G. Edwards and Howard F. Savage. Oct 61, declassified 1 Apr 63. 65p. 3 refs. Technical memo. X-581.

WT-1114 OTS $8.60

Ballistic Research Labs., Aberdeen Proving Ground, Md.
TRANSIENT DRAG CHARACTERISTICS OF A SPHERICAL MODEL, by Henry S. Burden. Final rept. on Operation Teapot. Jan 57, declassified 11 July 61. 92 p. 17 refs. TID-1114.

PB 163 011 OTS $5.60

Bureau of [Naval Weapons] Washington, D. C.
THE MEASUREMENT OF DENSITIES IN SHOCK WAVES BY THE SHADOWGRAPH METHOD, by P. C. Keenan and H. Polachek. 10 Sep 46, 51p. 14 refs. NAVORD rept. 86-46; ATI-34 098.

DESCRIPTORS: *Shock waves, Density, Measurement, Photographic recording systems, *Spark shadowgraph photography, Interferometers, Fluid dyanics

The usefulness of shadowgraph analysis in the study of shock waves is determined by the fact that the width of the shadow band is fixed by light rays which have penetrated only a short distance, usually not more than a few millimeters, behind the shock front. Consequently, the pattern is sensitive to the magnitude of the discontinuity in density and to the rate of change of density immediately behind the discontinuity. It is evident from the tables and diagrams of this report that the sensitivity to density changes behind the shock front can be increased by working at great screen distances. On the whole it is clear that the shadowgraph method is most efficient when applied to shocks of moderate strength and at screen distances up to 100R in air or 10 R in water

NASA N63-12951 OTS $1.00

Flight Research Center, National Aeronautics and Space Administration, Edwards, Calif.
CALIBRATIONS AND COMPARISONS OF PRESSURE-TYPE AIRSPEED-ALTITUDE SYSTEMS OF THE X-15 AIRPLANE FROM SUBSONIC TO HIGH SUPERSONIC SPEEDS, by Terry J. Larson and Lannie D. Webb. Feb 63, 37p. 28 refs. Technical note D-1724.

NASA N63-13912 OTS $2.60

Flight Research Center, National Aeronautics and Space Administration, Edwards, Calif.
SKIN AND STRUCTURAL TEMPERATURES MEASURED ON THE X-15 AIRPLANE DURING A FLIGHT TO A MACH NUMBER OF 3.3, by Robert D. Reed and Joe D. Watts. Jan 61, declassified 1 Apr 63. 24p. 1 ref. Technical memo X-468.

PB 163 003 OTS $12.50

Institute of Aerophysics, U. of Toronto (Canada).
PRESSURE PROBES AT VERY LOW DENSITY, by K. R. Enkenhus. Rept. on Contract AF 18(600)1185. Jan 57, 178p. 29 refs. UTIA rept. no. 43; [AFOSR] TN-57-237; AD-126 534.

DESCRIPTORS: *Pressure gages, Calibration, *Superaerodynamics, Gas flow, *Wind tunnels, Nozzles

Experimental tests of conventional impact probes and of a new type of probe (orifice probe) were made in the transition-flow regime and in free-molecule flow. The data may be applied to relate pressure readings to the free-stream Mach number when calibrating rarefied gas streams. The readings of conventional impact probes having 10^{o} internally and externally chamfered mouths and a length/radius ratio of 50 are compared with the Rayleigh supersonic pitot-tube formula over the range $1.2 \leq M_1 \leq 2.0$, $0.36 \leq Re_d \leq 41$, and with continuum and free-molecule flow theory in subsonic flows over the range $0.13 \leq M_1 \leq 0.95$, $0.011 \leq Re_d \leq 0.11$. The orifice probe, which consisted of a cylinder transverse to the stream with an orifice for taking pressure readings pierced in a piece of tinfoil cemented over an opening in the side, gave results which agreed with free-molecule flow theory in tests made in a subsonic nozzle at M = 0.13 to 0.86 and Knudsen numbers from 6.6 to 8.6. The pressure distribution around a cylinder in free-molecule flow was determined by rotating an orifice probe on its axis at several subsonic Mach numbers; the results agreed well with theory.

PB 163 002 OTS $2.60

Institute of Aerophysics, U. of Toronto (Canada).
PRESSURE PROBES IN FREE MOLECULE FLOW, by K. R. Enkenhus, E. L. Harris, and G. N. Patterson. Rept. on Contract AF 18(600)1185. June 59, 25p. 9 refs. UTIA rept. no. 62; AFOSR TR-59-120; AD-240 553.

DESCRIPTORS: *Superaerodynamics, *Pressure gages, Pressure, Measurement, Instrumentation, Orifices.

When the mean free path becomes a significant fraction of a characteristic dimension of a pressure probe, the continuum formulae relating the measured pressure to the free-stream pressure and Mach number are no longer valid. The case is treated where the mean free path is so large compared with the probe diameter that intermolecular collisions may be neglected. This is the condition for free molecule flow. Theoretical expressions are given for the pressure measured in a flowing gas with an orifice probe and a long-tube pressure probe. Experimental investigations were conducted using a low-density wind tunnel and a rotating arm apparatus. Agreement between theory and experiment was quite satisfactory. (Author)

PB 163 004 OTS $2.60

Institute of Aerophysics, U. of Toronto (Canada).
PROPERTIES OF IMPACT PRESSURE PROBES IN FREE MOLECULE FLOW, by E. L. Harris and G. N. Patterson. Rept. on Contract AF [18](600)1185. Apr 58, 27p. 9 refs. UTIA rept. no 52; AFOSR-TN-58-582; AD-162 102.

DESCRIPTORS: *Superaerodynamics, *Pressure gages, Gas flow, Velocity, Pressure, Measurement, Wind tunnels.

An expression has been derived for the mass flow through a circular tube in free molecule flow when the tube and gas are in relative motion. The gas entering the tube is assumed to have a Maxwellian distribution function and the molecular reflection process at the wall is assumed to be diffuse. The theory has been used to determine the pressure read by an impact probe in free molecule flow. Although the general expressions derived apply to any value of gas velocity and the tube size, the detailed calculations for the pressure probe are difficult except for the case of low speeds and long tubes. An experimental check of the theory has been carried out using impact probes in a whirling arm apparatus and in the UTIA low density wind tunnel. Agreement between theory and experiment is quite satisfactory. (Author)

NASA N63-12927 OTS $1.50

Langley Research Center, National Aeronautics and Space Administration, Langley Station, Va.
AN APPLICATION OF A NUMERICAL TECHNIQUE TO LIFTING-SURFACE THEORY FOR CALCULATION OF UNSTEADY AERODYNAMIC FORCES DUE TO CONTINUOUS SINUSOIDAL GUSTS ON SEVERAL WING PLANFORMS AT SUBSONIC SPEEDS, by Harold N. Murrow, Kermit G. Pratt, and Joseph A. Drischler. Feb 63, 56p. 10 refs. Technical note D-1501.

NASA N63-12915 OTS $1.00

Langley Research Center, National Aeronautics and Space Administration, Langley [Station] Va.
THE AERODYNAMIC CHARACTERISTICS OF A BODY IN THE FLOW FIELD NEAR THE TIP OF A CIRCULAR-ARC WING OF RECTANGULAR PLAN FORM AT A MACH NUMBER OF 2.01, by John P. Gapcynski. Jan 60, declassified 6 Feb 62. 40p. 2 refs. Technical memo. X-211.

NASA N63-13098 OTS $1.00

Langley Research Center, National Aeronautics and Space Administration, Langley Station, Va.
DESIGN, OPERATION, AND TESTING CAPABILITIES OF THE LANGLEY 11-INCH CERAMIC-HEATED TUNNEL, by Otto F. Trout, Jr. Feb 63, 33p. 23 refs. Technical note D-1598.

NASA N63-13108 OTS $0.50

Langley Research Center, National Aeronautics and Space Administration, Langley [Station] Va.
THE EFFECT OF CAMBER ON THE AERODYNAMIC CHARACTERISTICS OF A BODY AT A MACH NUMBER OF 2.01, by John P. Gapcynski. Sep 59, declassified 24 June 60. 19p. 4 refs. Technical memo. X-56.

NASA N63-12952 OTS $0.75

Langley Research Center, National Aeronautics and Space Administration, Langley [Station] Va.
EXPERIMENTAL AND CALCULATED RESULTS OF A FLUTTER INVESTIGATION OF SOME VERY LOW ASPECT-RATIO FLAT-PLATE SURFACES AT MACH NUMBERS FROM 0.62 TO 3.00, by Perry W. Hanson and Gilbert M. Levey. Aug 50, declassified 6 Feb 62. 24p. 6 refs. Technical memo. X-53.

NASA N63-12918 OTS $0.75

Langley Research Center, National Aeronautics and Space Administration, Langley [Station] Va.
AN INVESTIGATION AT SUBSONIC SPEEDS OF AERODYNAMIC CHARACTERISTICS AT ANGLES OF ATTACK FROM -4° TO 100° OF A DELTA-WING REENTRY CONFIGURATION HAVING FOLDING WING TIP PANELS, by Bernard Spencer, Jr. May 60, declassified 5 June 62. 28p. Technical memo. X-288.

NASA N63-13911 OTS $3.60

Langley Research Center, National Aeronautics and Space Administration, Langley [Station] Va.
INVESTIGATION OF THE NORMAL-FORCE, AXIAL-FORCE, AND PITCHING-MOMENT CHARACTERISTICS OF BLUNT LOW-FINENESS-RATIO BODIES OF REVOLUTION AT A MACH NUMBER OF 3.55, by Russell W. Mc Dearmon and Warren A. Lawson, Apr 61, declassified 1 Apr 63. 32p. 13 refs. Technical memo. X467.

NASA N63-12914 OTS $2.75

Langley Research Center, National Aeronautics and Space Administration, Langley [Station] Va.
SOME EFFECTS OF VARIATIONS IN DENSITY AND AERODYNAMIC PARAMETERS ON THE CALCULATED FLUTTER CHARACTERISTICS OF FINITE-SPAN SWEPT AND UNSWEPT WINGS AT SUBSONIC AND SUPERSONIC SPEEDS, by E. Carson Yates, Jr. Jan 60, declassified 6 Feb 62. 131p. 17 refs. Technical memo. X-182.

NASA N63-12913 OTS $1.25

Lewis Research Center, National Aeronautics and Space Administration, Cleveland, Ohio.
AERODYNAMIC CHARACTERISTICS OF SEVERAL FLAT-BOTTOM CONFIGURATIONS AT MACH 3.0 AND 3.5, by Murray Dryer and Roger W. Luidens. Jan 59, declassified 5 June 62. 42p. 14 refs. Memo. 1-2-59E.

Hydrodynamics, Hydraulics, and Hydrostatics

NASA N63-12953 OTS $1.00

Langley Research Center, National Aeronautics and Space Administration, Langley [Station] Va.
EFFECTS OF GROSS LOAD AND VARIOUS BOW MODIFICATIONS ON THE HYDRODYNAMIC CHARACTERISTICS OF A HIGH-SUBSONIC MINE-LAYING SEAPLANE, by Walter J. Kapryan. Jan 60, declassified 6 Feb 62. 35p. 1 ref. Technical memo X-71.

NASA N63-12917 OTS $1.00

Langley Research Center, National Aeronautics and Space Administration, Langley [Station] Va.
INTERFERENCE EFFECTS AT TRANSONIC SPEEDS OF JETS EXHAUSTING FROM THE HULL STEP OF A MODEL OF A LARGE, WATER-BASED AIRPLANE, by Beverly Z. Henry, Jr. Jan 60, declassified 6 Feb 62. 35p. 5 refs. Technical memo. X-218

METALLURGY

IS-394 OTS $4.60

Ames Lab., Iowa State U. of Science and Tech.
PURE METALS FROM CHEMICAL PROCESSES, by H. A. Wilhelm and David T. Peterson. Rept. on Contract W7405-eng-82. [1962] 47p. 15 refs.

ANL-FGF-300 OTS $1.10

Argonne National Lab., Ill.
ULTRASONIC "JACK HAMMER" DEVELOPMENTS, by Warren J. McGonnagle. Rept. on Contract W31-109-eng-38. 11 Sep 61, 6p. 1 ref. UAC-5624.

EURAEC-413 OTS $1.60

Centre d'Etude de l'Energie Nucleaire, Mol (Belgium).
IN-PILE CORROSION OF NUCLEAR MATERIALS. Quarterly rept. no. 1, 1 Mar-30 June 62, on Contract 084-62-3 RDB. 30 Nov 62, 11p. R. 2149.

DC-61-7-18 OTS $4.60

General Electric Co., Cincinnati, Ohio.
PRODUCTION OF MASSIVE HYDRIDE ZIRCONIUM, by W. M. McCain. Rept. on Contract AT(11-1)171. 14 July 61, 41p.

HW-75499 OTS $1.00

Hanford Atomic Products Operation, Richland, Wash.
ULTRASONIC LAMB-WAVE PROPAGATION MODELS FOR NON-DESTRUCTIVE TESTING APPLICATIONS, by C. E. Fitch. Rept. on Contract AT(45-1)1350. Oct 62, 36p. 7 refs.

AD-297 803 repriced OTS $5.00

Lockheed Aircraft Corp., Marietta, Ga.
DETERMINATION OF DESIGN DATA FOR HEAT TREATED TITANIUM ALLOY SHEET. VOLUME 3. TABLES OF DATA COLLECTED. Final rept. 31 Mar 59-31 Mar 62, on Materials Application, Contract AF 33(616)6346. Dec 62, 333p. ASD-TDR-62-335, Vol. 3; NASA N62-13018.

DESCRIPTORS: *Titanium alloys, Sheets, Vanadium alloys, Chromium alloys, Aluminum alloys, Molybdenum alloys, Tensile properties, Compressive properties, Shear stresses, Creep, Rupture, Welds, Low temperature research, High temperature research, Tables, Data, Design, Mechanical properties

Mechanical and physical property data were obtained for selected solution treated and aged titanium alloys in sheet form. Allovs investigated: B120VCA (Ti-13V-11Cr-3Al), Ti-6Al-4V, Ti-2.5Al-16V, and Ti-4Al-3Mo-1V. They were supplied in the heat treated condition from three or more heats and three thicknesses of each alloy. Static mechanical property data for tension, compression, bearing, shear, and crippling; creep and rupture data for tension, compression, bearing and shear; and axial-load fatigue data were obtained at room and elevated temperatures. Fastener and weld joint data from -320°F to 80°F and physical properties from -420°F to 1200°F were obtained. Volume 3 is a tabular compilation of all data obtained in the program. (Author)

NASA N62-17772 OTS $11.00

National Research Corp., Cambridge, Mass.
INVESTIGATION OF ADHESION AND COHESION OF METALS IN ULTRAHIGH VACUUM, by John L. Ham. Annual summary rept. no. 1, 15 June 61-31 July 62, on Contract NASr-48. 7 Sep 62, 143p. 10 refs.

TIM-65 OTS $2.60

Pratt and Whitney Aircraft Div., United Aircraft Corp., Hartford, Conn.
THE PROPERTIES OF LIQUID METALS MELTING BELOW 1000°F, by H. C. Hopkins. Rept. on Contract AT(11-1)229. 5 Oct 54, 27p.

Ferrous Metals

AD-278 176 OTS $8.10

British Welding Research Association, Cambrdige.
INFLUENCE OF ALLOYING ELEMENTS ON THE CONTINUOUS COOLING TRANSFORMATION AND WELDABILITY OF BINARY AND TERNARY ALLOYS OF IRON, PART II. Final technical rept. 1 Mar 61-28 Feb 62, on Contract DA 91-591-EUC-1719. May 62, 86p. Rept. no. C59/8/62-B2/32/62.

DESCRIPTORS: *Iron alloys, *Transformations, *Cooling, *Welding, Additives, Alloys, Transition temperature, Carbon alloys, Silicon alloys, Manganese alloys, Nickel alloys, Chromium alloys, Metallurgical analysis, Martensite, Austenite, Microstructure, Fracture (Mechanics), Hardness, Heat treatment, Steel

This volume consists of diagrams showing the percentage of heat-affected zone cracking in bead-on-plate welding tests. (ASTIA abstract)

PB 181 468 OTS $1.25

United States Steel Corp. [Pittsburgh, Pa.]
MECHANICAL PROPERTIES OF HIGH-MANGANESE SEMIKILLED STEEL PLATE, by R. W. Vanderbeck. Final rept. on Contract NObs-84321. 2 Jan 63, 44p. 18 refs. Ship Structure Committee Serial no. SSC-144.

DESCRIPTORS: *Ship plates, *Steel, *Manganese alloys, Mechanical properties, Tensile properties, Impact shock, Shock resistance, Explosions, Fracture (Mechanics)

Test results obtained on seven production heats of semi-killed steel containing 0.20% maximum carbon and 1.00 to 1.35% manganese indicate that as-rolled plates of this composition in thicknesses over 1 to 1-1/2 in. would meet the American Bureau of Shipping tensile requirements but might not have sufficient notch toughness to be considered a suitable substitute for as-rolled ABS Class C steel in thickness over 1 in. The results of V-notch Charpy and drop-weight tests were not in complete agreement, and drop-weight transition temperatures obtained with full-plate-thickness specimens were appreciably higher than those obtained with specimens of reduced thickness. The most favorable interpretation of notch-toughness behavior was obtained using drop-weight tests with 1-in.-thick specimens, and, on this basis, the experimental steel in thicknesses over 1 to 1-1/2 in., inclusive, was about as suitable as ABS Class B steel in its maximum thickness of 1 in.

NUCLEAR PHYSICS AND NUCLEAR CHEMISTRY

IS-520 OTS $1.25

Ames Lab., Iowa State U. of Science and Tech.
CATALOG OF NUCLEAR QUADRUPOLE INTERACTIONS AND RESONANCE FREQUENCIES IN SOLIDS. PART I. ELEMENTS AND INORGANIC COMPOUNDS, by S. L. Segel and R. G. Barnes. Rept. on Contract W7405-eng-82. Oct 62, 69p. 292 refs.

ANL-6598 OTS $2.50

Argonne National Lab., Ill.
ISOMERIC-YIELD RATIOS IN NUCLEAR REACTIONS. (With a compilation of experimental data) by James Wing. Rept. on Contract W31-109-eng-38. Sep 62, 144p. 232 refs.

ARF-1164-27 OTS $2.25

Armour Research Foundation, Chicago, Ill.
RESEARCH ON NEUTRON INTERACTIONS IN MATTER AS RELATED TO IMAGE FORMATION, by H. V. Watts. Final rept. on Contract AT(11-1)578. 22 Aug 62, 97p. 23 refs. NASA N63-11821.

BMI-1606 OTS $1.50

Battelle Memorial Inst., Columbus, Ohio.
STUDIES OF ON-STREAM PRODUCTION OF SHORT-LIVED INTRINSIC RADIOTRACERS FOR INDUSTRIAL PROCESS CONTROL, by Peter Gluck, James L. McFarling and others. Rept. on Contract W7405-eng-92. 18 Dec 62, 55p. 14 refs. NASA N63-11729.

BNL-5412 OTS $1.10

Brookhaven National Lab., Upton, N. Y.
FLUX FLATTENING BY VARIATION OF RESONANCE ESCAPE PROBABILITY, by James R. Powell. [Rept. on Contract AT(30-2)GEN-16]. 18 July 61, 8p. 2 refs.

HW-75526 OTS $1.00

Hanford Atomic Products Operation, Richland, Wash.
SCATTERING LAW FOR ROOM TEMPERATURE LIGHT WATER, by D. A. Kottwitz and B. R. Leonard, Jr. Rept. on Contract AT(45-1)1350. 7 Nov 62, 39p. 14 refs.

Elementary Particles

NASA N63-13103 OTS $0.50

Goddard Space Flight Center, National Aeronautics and Space Administration, Greenbelt, Md.
NEUTRONS IN SPACE, by Wilmot N. Hess. Feb 63, 11p. 14 refs. Technical note D-1696.

NASA N63-13102 OTS $0.75

Goddard Space Flight Center, National Aeronautics and Space Administration, Greenbelt, Md.
ON THE ANOMALOUS COMPONENT OF LOW-ENERGY GEOMAGNETICALLY TRAPPED PROTONS, by A. M. Lenchek. Feb 63, 25p. 27 refs. Technical note D-1679.

Instruments and Installations

BNL-5792 OTS $1.60

Brookhaven National Lab., Upton, N. Y.
ENERGY MODULATION OF A 3.6 MILLION VOLT VAN DE GRAAFF ELECTROSTATIC ACCELERATOR, by E. J. Rogers. [Rept. on Contract AT(30-2)GEN-16 23 July 62]. 13p. 2 refs.

BNL-763 OTS $0.50

Brookhaven National Lab., Upton, N. Y.
EXTENDING THE RANGE OF THE "FRICKE" DOSIMETER UP TO 10^6 RADS, by F. J. Haasbroek. [Rept. on Contract AT(30-2)GEN-16]. April 62, 18p. 12 refs. T-284, NASA N63-12336.

Nuclear Engineering and Power

AGN-TM-398 OTS $2.75

Aerojet-General Nucleonics, San Ramon, Calif.
DESIGN REPORT FOR AN IMPROVED ML-1 PRESSURE VESSEL. Rept. on Contract AT(10-1)880. Nov 62, 170p.

IDO-28595 OTS $2.00

Aerojet-General Nucleonics, San Ramon, Calif.
HECTIC-II, AN IBM 7090 FORTRAN COMPUTER PROGRAM FOR HEAT TRANSFER ANALYSIS OF GAS OR LIQUID COOLED REACTOR PASSAGES, by N. Kattchee and W. C. Reynolds. Rept. on Contract AT(10-1)880. Dec 62, 84p. 6 refs.

IDO-28560(Vol. I) OTS $3.50

Aerojet-General Corp., San Ramon, Calif.
ML-1 NUCLEAR POWER PLANT. Final hazards summary rept. on Contract AT(10-1)880. Nov 62, 297p.

ACNP-62574 OTS $18.00

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
CONSTRUCTION AUTHORIZATION OF THE LA CROSSE BOILING-WATER REACTOR. Hazards summary rept. on Contract AT(11-1)850. Oct 62, 282p. 41 refs.

ACNP-62018 OTS $3.60

Allis-Chalmers Mfg. Co., Milwaukee, Wis.
PATHFINDER ATOMIC POWER PLANT TECHNICAL PROGRESS REPORT. Rept. for Apr-June 62, on Contract AT(11-1)589. 31 Oct 62, 36p. 2 refs.

ANL-6636 OTS $1.00

Argonne National Lab., Ill.
HIGH-TEMPERATURE SENSORS FOR BORAX-V BOILING FUEL RODS, by E. J. Brooks, W. C. Kramer, and R. D. McGowan. Rept. on Contract W31-109-eng-38. Oct 62, 39p. 21 refs. NASA N63-12935.

ANL-FGF-343 OTS $2.60

Argonne National Lab., Ill.
PHASE STUDIES ON ARC-MELTED PLUTONIUM-CARBON ALLOYS NEAR THE MONOCARBIDE COMPOSITION, by Owen L. Kruger. Rept. on Contract W31-109-eng-38. 23 Apr 62, 25p. 8 refs. UAC-6361.

ANL-FGF-321 OTS $2.60

Argonne National Lab., Ill.
PREPARATION AND SOME PROPERTIES OF ARC-CAST PLUTONIUM MONOCARBIDE, by O. L. Kruger. Rept. on Contract W31-109-eng-38. 5 Feb 62, 22p. 12 refs. UAC-6095.

ANL-6658 OTS $2.00

Argonne National Lab., Ill.
REACTOR DEVELOPMENT PROGRAM. Progress rept. Nov 62, on Contract W31-109-eng-38. 15 Dec 62, 79p. 47 refs. NASA N63-11492.

ANL-6672 OTS $1.25

Argonne National Lab., Ill.
REACTOR DEVELOPMENT PROGRAM PROGRESS REPORT. Rept. on Contract W31-109-eng-38. Dec 62, 51p. 24 refs. NASA N63-12318.

ANL-6495 OTS $0.75

Argonne National Lab., Ill.
A STUDY OF URANIUM-FISSIUM ALLOYS CONTAINING TECHNETIUM, by R. W. Bohl and M. V. Nevitt. Rept. on Contract W31-109-eng-38. Oct 62, 28p. 6 refs.

ANL-6532 OTS $1.00

Argonne National Lab., Ill.
SWELLING OF URANIUM AND URANIUM ALLOYS ON POSTIRRADIATION ANNEALING, by B. A. Loomis and D. W. Pracht. Rept. on Contract W31-109-eng-38. Sep 62, 39p. 16 refs.

BMI-X-197 OTS $1.10

Battelle Memorial Inst., Columbus, Ohio.
DEVELOPMENT OF URANIUM MONONITRIDE, by Donald L. Keller. Quarterly progress rept., Jan-Mar 62, on Contract W7405-eng-92. 1 Apr 62, 10p. EURAEC-348.

BMI-X-196 OTS $1.60

Battelle Memorial Inst., Columbus, Ohio.
FISSION-PRODUCT RELEASE FROM FUEL-ELEMENT CLADDINGS, by Arthur A. Bauer. Quarterly progress rept., Jan-Mar 62, on Contract W7405-eng-92. 1 Apr 62, 11p. EURAEC-349.

BMI-1608 OTS $0.50

Battelle Memorial Inst., Columbus, Ohio.
HIGH-TEMPERATURE IRRADIATION TEST OF UO_2 CERMET FUELS, by Donald L. Keller, George W. Cunningham and others. Rept. on Contract W7405-eng 92. 7 Jan 63, 22p. 1 ref. NASA N63-12687.

BMI-1600(Del.) OTS $2.00

Battelle Memorial Inst., Columbus, Ohio.
PROGRESS RELATING TO CIVILIAN APPLICATIONS DURING OCTOBER, 1962, by Russell W. Dayton and Ronald F. Dickerson. Rept. on Contract W7405-eng-92. 1 Nov 62, 84p.

BNL-6080 OTS $2.75

Brookhaven National Lab., Upton, N. Y.
A COMPARISON OF THE NUCLEAR DEFENSE CAPABILITIES OF NUCLEAR AND COAL-FIRED POWER PLANTS. Rept. on Contracts AT(30-2)GEN-17 and W7405-eng-26. May 62, 191p. 10 refs. SL-1925 and CF-61-12-20(Rev.). Prepared in cooperation with Oak Ridge National Lab., Sargent and Lundy, and Burns and Roe, Inc.

BNL-639 OTS $0.50

Brookhaven National Lab., Upton, N. Y.
DISTRIBUTION OF URANIUM AND CERIUM BETWEEN LIQUID BISMUTH-MAGNESIUM ALLOY AND LIQUID NaCl-KCl-$MgCl_2$ EUTECTIC, by F. J. Salzano and F. B. Hill. June 62, 19p. 13 refs. T-201; NASA N63-12333.

BNL-758 OTS $0.50

Brookhaven National Lab., Upton, N. Y.
GRAPHITE PROBLEMS IN AIR-COOLED REACTORS, by Donald G. Schweitzer and Robert M. Singer. [Rept. on Contract AT(30-2)GEN-16]. Oct 62, 8p. 9 refs. T-281; NASA N63-13553.

DP-805 OTS $1.50

du Pont de Nemours, E. I., and Co., Wilmington, Del.
HEAVY WATER MODERATED POWER REACTORS, comp. by L. Isakoff and R. R. Hood. Progress rept. Nov 62, on Contract AT(07-2)1. Dec 62, 60p. 59 refs.

GA-2802 OTS $2.25

General Atomic Div., General Dynamics Corp., San Diego, Calif.
HIGH-ENERGY NEUTRON-INDUCED CHANGES IN CARBON AND GRAPHITE, by Glen B. Engle. A Review. Rept. on Contract AT(04-3)314. 20 Sep 62, 100p. 74 refs. NASA N63-12139.

GEMP-160 OTS $8.10

General Electric Co., Cincinnati, Ohio.
630A MARITIME NUCLEAR STEAM GENERATOR. Progress rept. no. 3 on Contract AT(40-1)2847. 30 Nov 62, 89p.

GEAP-4026 OTS $0.75

General Electric Co., San Jose, Calif.
IN-CORE INSTRUMENTATION DEVELOPMENT, FIRST TOPICAL REPORT, TASK II, PHASE I. TELEMETERING, by A. C. Duckart. Rept. on Contract AT(04-3)189. 15 Mar 62, 31p. NASA N63-11947.

GNEC-254 OTS $14.00

General Nuclear Engineering Corp., Dunedin, Fla.
NUCLEAR SUPERHEAT DEVELOPMENT PROGRAM, by S. E. Turner, H. V. Lichtenberger and others. Quarterly progress rept. no. 13, July-Sep 62, on Contract AT(11-1)795. 31 Oct 62, 205p. 16 refs.

HW-67949(rev.) OTS $0.50

Hanford Atomic Products Operation, Richland, Wash.
EVALUATION OF PROPERTIES OF IRRADIATED ZIRCALOY-2 PRESSURE TUBE FROM KER LOOP 1, by L. J. Defferding. Rept. on Contract AT(45-1)1350. Dec 62, 21p. 5 refs. NASA N63-12947.

HW-75725 OTS $1.10

Hanford Atomic Products Operation, Richland, Wash.
HANFORD STUDIES EXECUTED FOR THE USAEC-AECL COOPERATIVE PROGRAM ON DEVELOPMENT OF HEAVY WATER MODERATED POWER REACTORS, comp. by F. W. Albaugh. Monthly progress rept. for Nov 62, on Contract AT(45-1)1350. 10 Dec 62, 7p.

HW-72304 OTS $1.60

Hanford Atomic Products Operation, Richland, Wash.
A HEURISTIC STUDY OF PLUTONIUM VALUE IN A FAST OXIDE BREEDER, by P. L. Hofmann and G. J. Busselman. Rept. on Contract AT(45-1)1350. 15 Jan 62, 17p. 8 refs.

HW-75914 OTS $2.50

Hanford Atomic Products Operation, Richland, Wash.
QUARTERLY PROGRESS REPORT FOR JULY-SEPTEMBER, 1962, ed. by M. M. Hendrickson and J. E. Brown. Rept. on Contract AT(45-1)1350. Dec 62, 138p. 22 refs. NASA N63-13015.

HW-69945 OTS $1.00

Hanford Atomic Products Operation, Richland, Wash.
THERMAL CONDUCTIVITY OF UO_2, by J. L. Daniel, J. Matolich, Jr. and H. W. Deem. Rept. on Contract AT(45-1)1350. Sep 62, 38p. 26 refs.

NASA N63-13182 OTS $1.25

Lewis Research Center, National Aeronautics and Space Administration, Cleveland, Ohio.
LOW-POWER TESTS OF THE PLUM BROOK REACTOR, by Harold W. Giesler, Harry J. Reilly, and William A. Poley. Feb 63, 50p. 11 refs. Technical note D-1560.

GEAP-4069 OTS $3.60

Vallecitos Atomic Lab., Pleasanton, Calif.
POWER CYCLING OF HIGH POWER DENSITY FUEL SPECIMENS CLAD WITH 10-MIL WALL STAINLESS STEEL, by T. C. Rowland and J. S. Atkinson. Rept. on Contract AT(04-3)361. Oct 62, 37p. 3 refs.

Radioactivity

HW-75431 OTS $0.75

Hanford Atomic Products Operation, Richland, Wash.
EVALUATION OF RADIOLOGICAL CONDITIONS IN THE VICINITY OF HANFORD, ed. by J. W. Vanderbeek. Rept. July-Sep 62, on Contract AT(45-1)1350. 12 Oct 62, 27p. 2 refs.

HASL-132 OTS $3.50

Health and Safety Lab., Atomic Energy Commission, N. Y.
FALLOUT PROGRAM, by Edward P. Hardy, Jr., Joseph Rivera, and William R. Collins, Jr. Quarterly summary rept. 1 Sep-1 Dec 62. 1 Jan 63, 260p. 68 refs.

PHYSICS

NASA N63-12949 OTS $0.75

Ames Research Center, National Aeronautics and Space Administration, Moffett Field, Calif.
THE MAGNETIC FIELD OF A LINE CURRENT IN A TRANSVERSE RAREFIED PLASMA STREAM, by Albert G. Munson. Feb 63, 22p. 10 refs. Technical note D-1551.

ANL-6647 OTS $1.75

Argonne National Lab., Ill.
A TREATMENT OF SOME PERIODIC POTENTIAL PROBLEMS, by Dan McColl and O. C. Simpson. Rept. on Contract W31-109-eng-38. Nov 62, 73p. 8 refs. NASA N63-11752.

BNL-5674 OTS $1.60

Brookhaven National Lab., Upton, N. Y.
SPIN DENSITY DISTRIBUTIONS AND HARTREE-FOCK CALCULATIONS FOR THE IRON GROUP SERIES, by Robert Nathans, Stanley J. Pickart, and Harvey A. Alperin. 6 Nov 61, 13p. 22 refs.

PB 162 989 OTS $1.60

Fluid Mechanics Lab., Mass. Inst. of Tech., Cambridge.
ENERGY TRANSFER IN A DENSE PLASMA, by James A. Fay. Rept. on Project Defender, Grant AF-AFOSR 62-329 and Contract Nonr-1841(93). Jan 63, 18p. 7 refs. Publication no. 63-1.

DESCRIPTORS: *Plasma physics, *Energy, *Transport properties, Electron density, Electron transitions, Photons, Thermal conductivity, Boundary layer, Magnetohydrodynamics, Gas ionization.

In assessing the relative roles of diffusion of heat and recombination energy in a collision-dominated plasma, it is found that the former is augmented by the presence of electrons while the latter is inhibited by charge-exchange collisions and that the former can be reduced by magnetic fields while the latter is relatively unaffected. Under the proper conditions of electron density and temperature, the energy transport due to photons may be treated as a conduction process, and may be the dominant energy transport mechanism. All of these effects are probably susceptible to experimental study in the laboratory utilizing shock tubes or free flight ranges. (Author)

PB 162 988 OTS $1.60

Fluid Mechanics Lab., Mass. Inst. of Tech., Cambridge.
RADIATION SLIP, by Ronald F. Probstein. Rept. on Project Defender, Contract Nonr-1841(93). Feb 63, 12p. 11 refs. Publication no. 63-2.

DESCRIPTORS: *Fluid mechanics, *Heat transfer, *Transport properties, Gases, Molecular properties, Photons, Blackbody radiation, Thermal radiation.

The problem of calculating radiative heat transfer between a gas and a surface in the "transition" regime, between an optically thick (opaque) medium and an optically thin (transparent) one, may be circumvented by the use of a simple rarefied flow model. The model uses the radiation conduction equation, valid for an optically dense medium in conjunction with a "radiation slip" boundary condition.

PB 163 016 OTS $2.60

Lincoln Lab., Mass. Inst. of Tech., Lexington.
TABLES AND SOME PROPERTIES OF LIQUID HELIUM, by J. Fineman and C. E. Chase. Rept. on Contract AF 19(604)5200. 10 Aug 59, 28p. 8 refs. Group rept. no. 46-46; AD-244 404.

DESCRIPTORS: Liquefied gases, *Helium, Data, Physical properties, Cryogenics, Tables.

Data collected from various sources that will be of use to physicists who work with liquid helium are presented. We have tried to include the most recent and reliable data on each of the common properties tabulated. Each table is accompanied by notes on its source and on its proper use, and by a graph which gives the general shape of the property as a function of temperature, as well as allowing approximate values to be read quickly. (Author)

AD-294 984 repriced OTS $2.25

Naval Ordnance Lab., White Oak, Md.
EXTINCTION LIGHT AT NORMAL INCIDENCE BY DIELECTRIC CYLINDERS WITH REFRACTIVE INDEX IN THE RANGE m=1.15 TO m=1.30 SCATTERING COEFFICIENTS, by Louis F. Libelo. 31 Aug 62, 91p. 25 refs. Rept. no. NOLTR 62-157.

DESCRIPTORS: *Light, *Electromagnetic waves, *Dielectrics, Numerical analysis, Real variables, *Tables, Polarization, Wire, Gold wire, Special functions, Magnetic fields, Refractive index, Scattering, Cylindrical bodies.

Presented are tables of the complex scattering coefficients for the problem of scattering of normally incident linearly polarized plane electromagnetic waves by dielectric infinite circular cylinders. The numerical results were obtained by means of the IBM 7090 computer system. Contained in the tables are the scattering coefficients for the incident plane wave polarized parallel to the cylinder axis and also those for the incident plane wave polarized normal to the cylinder axis. The extent of the tables are as follows: for refractive indices m=1.15 and m = 1.30 the circumference to wave length ratio x=2 pi a/lambda extends over the range 0.100(0.200)13.500. For refractive indices m=1.20 and m=1.25 the range in x is 0.100(0.200)13.300. The rather extensive results tabulated are compared where possible, with those somewhat more limited ones obtained by other investigators. (Author)

AD-297 399 repriced OTS $2.75

Naval Ordnance Lab., White Oak, Md.
SCATTERING OF LIGHT AT NORMAL INCIDENCE BY DIELECTRIC CYLINDERS WITH REFRACTIVE INDEX IN THE RANGE m=1.400 TO m = 3.00 -- SCATTERING COEFFICIENTS, by Louis F. Libelo. 24 Sep 62, 128p. 14 refs. Rept. no. NOLTR 62-161.

DESCRIPTORS: *Light, *Dielectrics, Refractive index, Electromagnetic properties, Radiation effects, Cylindrical bodies, Polarization, Scattering, Refraction, *Tables.

For the refractive indexes m = 1.40, 1.50, 1.60, 2.00, and 3.00 tables of the complex scattering coefficients are presented. These coefficients arise in the problem of the scattering by a homogeneous, isotropic, dielectric, infinite circular cylinder of normally incident, linearly polarized, plane electromagnetic radiation. The numerical results were obtained by means of the IBM 7090 computer system of the U. S. Naval Ordnance Laboratory. The tables contain not only the scattering coefficients for the incident plane wave polarized parallel to the cylinder axis, but also those for the incident radiation polarized normal to this axis. (Author)

TIM-384 OTS $1.60

Pratt and Whitney Aircraft Div., United Aircraft Corp., Hartford, Conn.
FUNCTION SCALES AND NOMOGRAPHS FOR THE CALCULATION OF AIR PRESSURE DROP THROUGH A CONSTANT AREA HEATED PASSAGE, by Paul G. Kvick. 26 Feb 57, 20p.

AD-280 108 OTS $1.60

Space Technology Labs., Inc., Canoga Park, Calif.
ATTACHMENT AND PHOTODETACHMENT STUDIES, by F. N. Mastrup. Rept. no. 4 (Final) on Contract AF 19(604)7985. 30 Dec 61, 12p. Rept. no. 8967-6004-RU-000; AFCRL 62-420; NASA N62-11050.

DESCRIPTORS: *Selenium compounds, *Tellurium compounds, *Fluorides, *Electron capture, *Attachment, Electrons, Energy, Measurement, Impact shock, Ions, Molecules, Vibration, Quantum mechanics.

The electron capture cross sections of SF_6 and SeF_6 have been measured as a function of electron energy utilizing a retarding potential difference technique. Cross sections were found to be on the order of $10^{-16} cm^2$.

Electronics

AD-292 756 OTS $2.60

Hughes Research Labs., Malibu, Calif.
CESIUM PLASMA STUDIES FOR THERMIONIC ENERGY CONVERSION, by J. Y. Wada and R. C. Knechtli. Semiannual technical summary rept. on Contract Nonr-3501(00), phase 2. Dec 62, 25p. 8 refs.

DESCRIPTORS: *Energy conversion, *Thermionic emission, *Cesium, *Plasma physics, Electrons, Gas discharges, Energy, Measurement, Temperature, Heating, Acceleration

The thermalization of an electron stream injected at a controlled energy (up to 7 e V) into a quiescent cesium plasma has been observed. The plasma heating associated with the thermalization of the injected electrons has been measured and was found to be in general agreement with theoretical expectations. The resistivity of a highly ionized quiescent cesium plasma has been measured for small current densities (negligible ohmic heating of the plasma), at temperatures between 2000 and 2500°K. The measured values of resistivity were found to be in good agreement with those theoretically predicted by Spitzer.

AD-255 041 OTS $1.60

RCA Defense Electronic Products, Princeton, N. J.
PLASMA ACCELERATION BY A QUASISTATIC RF ELECTRIC FIELD GRADIENT, by T. T. Reboul, G. D. Gordon, and G. A. Schwartz (RCA Labs. Div.). Rept. on Contract AF 49(638)658. [1960] 18p. 13 refs. AFOSR TN-60-997.

DESCRIPTORS: *Plasma physics, Frequency, Acceleration, *Electric fields, Density, Radiofrequency, Ions, Electrons.

Theoretical and experimental phases of the acceleration of a plasma by a quasistatic rf electric field gradient were studied. Theoretical studies indicate that a plasma will be accelerated toward the low-field region if the applied frequency is greater than a critical frequency of the plasma, and toward the high-field region if the frequency is less than the critical frequency. The critical frequency is a function of ion density and is equal to the electron plasma frequency for a plasma slab with the rf field perpendicular to its face. Acceleration and deceleration of plasma were observed experimentally. The observed acceleration is consistent with the theoretical predictions. A tenuous mercury plasma (critical frequency less than the applied frequency of 140 Mc) was accelerated from 500,000 cm/sec to 2,500,000 cm/sec as the maximum electric field was increased from zero to 170 v/cm. Denser plasmas were decelerated in the same field. (Author)

PB 154 694 OTS $2.60

Stevens Inst. of Tech., Hoboken, N. J.
SELF CONSISTENT FIELD THEORY OF PLASMA BETATRONS, by George Schmidt. Research rept. on Contract DA 36-039-sc-78097. Aug 60, 22p. 9 refs. Rept. no. SIT-P17(8/60).

DESCRIPTORS: *Plasma physics, *Field theory, Relativity theory, *Betatrons, *Electron beams, Containment, Magnetic fields, Magnetic pinch

A quasi-stationary, self-consistent field theory is developed for the space-charge neutralized plasma betatron. It is found that the equilibrium orbit shrinks in the first phase of the acceleration process, and this sets a limit to the number of particles which can be accelerated. Exceeding this limit the beam collapses. During the acceleration process, the beam passes through a betatron damping dominated and a self pinching phase, and finally enters the relativistic regime. Limits where these phases set in, as well as the beam behavior in different phases is given. (Author)

Molecular Physics and Spectroscopy

AD-293 484 OTS $2.60

Westinghouse Research Labs., Pittsburgh, Pa.
MASS SPECTROMETER INVESTIGATION OF ELECTRON IMPACT PROCESSES AT PRESSURES TO 1 MM HG, by R. K. Curran. Technical rept. no. 15 on Project Defender, Contract Nonr-2584(00). 24 Sep 62, 24p. 10 refs. Scientific paper 62-928-113-P2. ARPA Order no. 125-61.

Source pressures to about 1 mm Hg are used. The electron beam is controlled by the retarding potential difference technique for reducing the effective width in energy of the electron distribution. (Author)

AD-293 485 OTS $1.10

Westinghouse Research Labs., Pittsburgh, Pa.
RESONANCE IN THE ELASTIC SCATTERING OF ELECTRONS IN HELIUM, by G. J. Schulz. Technical rept. no. 3 on Project Defender, Contract Nonr-2584(00). 4 Dec 62, 10p. 7 refs. Scientific paper 62-928-113-P3; ARPA Order no. 125-61.

DESCRIPTORS: *Helium, Electrons, *Elastic scattering, *Resonance scattering, Absorption spectrum, Electron beams, Atomic energy levels.

A recent theory on the elastic scattering of electrons in atomic hydrogen shows a sharp resonance below the first electronic state of hydrogen. The elastic cross section in helium was examined experimentally using electrons with an energy spread considerably narrower than used previously. A sharp resonance is found in the scattered electrons at 72 degrees at an energy of 19.3 ± 0.1 eV, i.e. below the onset of the first excited state, 2^3S.

DESCRIPTORS: *Electron bombardment, Electron beams, Spectrographic analysis, *Mass spectroscopy, Excitation, Ions, Pressure, Energy, Gases, Ionization, Impact shock.

A mass spectrometer for the study of secondary reactions involving ions, excited species and molecules is described. The instrument was checked with the Hornbeck-Molnar process for He_2^+ formation in He, O_3^+ and O_4^+ formation in O_2 and N_3^+ and N_4^+ formation in N_2.

Solid State Physics

IS-542 OTS $0.50

Ames Lab., Iowa State U. of Science and Tech.
GROWTH OF SINGLE CRYSTALS OF LEAD, CADMIUM AND BISMUTH USING THE BRIDGMAN METHOD, by James Herriott, Morton Smutz, and Edwin H. Olson. Rept. on Contract W7405-eng-82. Nov 62, 25p. 4 refs.

GAT-T-950 OTS $2.60

Goodyear Atomic Corp., Portsmouth, Ohio.
THE LIKELIHOOD RATIO METHOD FOR THE PRECISE AND ACCURATE DETERMINATION OF LATTICE PARAMETERS, by K. E. Beu, F. J. Musil, and D. R. Whitney (Ohio State U.) Rept. on Contract AT(33-2)1. 18 Aug 61, 26p. 18 refs.

AD-278 646 OTS $3.60

Guggenheim Aeronautical Lab., Calif. Inst. of Tech., Pasadena.
A THEORY OF ELEVATED TEMPERATURE-HIGH STRESS LEVEL FATIGUE, by S. R. Valluri, J. H. Mauldin, and P. H. Francis. Rept. on Kinetics of Deformation and Fracture, Contract AF 33(616)6270. July 62, 38p. 6 refs. ARL 62-371; NASA N62-14390.

DESCRIPTORS: *Metals, *Fatigue (Mechanics), *Temperature, Theory, Fracture (Mechanics), Stresses Lattices, Deformation, Elasticity, Plasticity.

The proposed theory of elevated temperature fatigue is based on the estimation of the growth of a dominant crack considered responsible for the ultimate catastrophic failure. One of the important variables in the expression for crack propagation is an internal stress which is presumed to oppose the motion of dislocations. As a fundamental hypothesis of the theory, this internal stress is also identified with the endurance limit for failure at an arbitrarily large number of cycles. By formally adopting the theory of recovery as a function of temperature and time proposed by Cottrell and Aytekin, it has been found possible to take into account the decrease of internal stresses at elevated temperatures. The resulting expressions lead to a first order theory of elevated temperature fatigue. Comparison between the theory and the available test results appears to be fair. As incidental information the theory defines a characteristic temperature which is approximately the same for a wide variety of aluminum alloys. Within the temperature range for which the theory is tested, it appears that a simple linear relationship exists between the endurance limit at room temperature and the elevated temperatures. (Author)

PB 162 848 OTS $1.60

Union Carbide [Consumer Products Co.] Parma, Ohio.
THERMOELECTRIC MATERIALS, by R. G. Breckenridge. Bimonthly progress rept. no. 8, 28 Mar-28 May 60, on Contract NObs-77066. 15 June 60, 20p. 3 refs. AD-245 092.

DESCRIPTORS: *Thermoelectricity, *Semiconductors, Electrical properties, Nitrides, Electrical conductance, Rare earth compounds, Resistance, Refractory materials, Ytterbium compounds, Silicon compounds, Carbides, Graphite, Carbon.

The compounding, extrusion, and baking of Si-C mixes to make n-type thermoelectric material was continued. The baking procedure for SiC-C rods was reduced to the following steps: (1) baking at 400°, 500°, and 600°C for 1/2 hr intervals and at 1000°C for 1 hr. using methane gas and packing-coke medium, and (2) baking to 2000°C, using an H-Ar gas mixture and a proprietary TiC-SiC-Si packing medium. Apparatus and circuitry for the measurement of the thermoelectric power and electrical resistivity of refractory materials from room temperature to at least 1500°C was satisfactorily operated. The use of differential couples allows determination of the small temperature drop across the sample to a high degree of precision. Values were obtained for a sample of SiC-C, which indicate a thermoelectric power versus Pt of -70 μv/°C at room temperature, increasing to -110 μv/°C at 1000°C.

PB 162 985 OTS $7.60

Westinghouse Research Labs., Pittsburgh, Pa
[THERMOELECTRICITY]. Theoretical quarterly progress rept. no. 4 (Final) on Contract NObs-84687. 11 June 62, 71p. 68 refs.

DESCRIPTORS: *Thermoelectricity, *Semiconductor devices, *Bismuth compounds, *Tellurides, Impurities, Tellurium, *Hall effect, Low temperature research, *Single crystals, *Bismuth, Transport properties, Resistance, Electrons, Models (Simulations).

This report includes:
High mobility N-Type bismuth telluride, by Roland W. Ure, Jr. 11 June 62 (Scientific paper 62-129-104-P4)
The transport properties of bismuth single crystals, by C. Gallo, B. S. Chandrasekhar, and P. H. Sutter.

Theoretical Physics

NASA N63-14065 OTS $2.60

Theoretical Chemistry Inst., U. of Wisconsin, Madison
TRUNCATED REACTION OPERATORS AND THE HELIUM PROBLEM, by William J. Meath, Kenneth M. Sando and others. Rept. on Grant NsG 275-62 and Contracts AF 33(657)7311 and NOrd-15884. 25 Feb 63, 25p. 16 refs. WIS TCI-10, series 3.

NASA N63-14066 OTS $1.60

Theoretical Chemistry Inst., U. of Wisconsin, Madison.
THE HYPERVIRIAL THEOREM FOR COLLISIONS BETWEEN ELECTRONS AND ATOMS, by Michael B. McElroy and Joseph O. Hirschfelder. Rept. on Grant NsG 275-62 and Contract AF 33(657)7311. 8 Mar 63, 20p. 10 refs. WIS TCI-11, series 3.

Thermodynamics

IS-571 OTS $0.50

Ames Lab., Iowa State U. of Science and Tech.
THERMAL EFFICIENCY OF COATED ANNULAR FINS OF UNIFORM THICKNESS, by William F. Brown, Ray W. Fisher, and Henry M. Black. Rept. on Contract W7405-eng-82. Nov 62, 23p. 7 refs.

PB 162 791 OTS $1.10

[Heat Measurement Lab.] Mass. Inst. of Tech., Cambridge.
EFFECT OF ELECTRIC CURRENT ON THERMISTOR TEMPERATURE ERROR, by W. M. Rohsenow and John Stekly. Rept. for 1 July 55-30 June 56, on Contract DA 19-016-eng-4010. Apr 60, 8p. 2 refs. ACFEL Technical rept. no. 71; AD-238 362.

DESCRIPTORS: *Thermistors, Temperature, Measurement, Errors, Heat transfer, *Soils, *Snow, *Ice.

An analysis of the effect of internal heat generation in thermistors due to electric current during temperature measurements is presented. Calculations of steady-state temperature rise above ambient for one type of thermistor located in soil, ice, light snow, medium snow, and heavy snow, ranged from 6.5×10^{-5} to 246×10^{-5} °F. while for a thermistor located in air, the magnitude of error ranged from 712×10^{-5} to 1425×10^{-5} °F, depending on the heat transfer coefficient. The calculations indicate that errors due to internal heating may be disregarded for ground and air temperature. (Author)

PB 158 601 OTS $1.60

Illinois Inst. of Tech., Chicago.
THERMODYNAMIC PROPERTIES IN THE SYSTEM HYDROGEN-HAFNIUM, by Russell K. Edwards and Ewald Veleckis (Master's thesis). [Rept. on Contract AF 49(638)346]. [1957] 16p. [AFOSR-1108].

DESCRIPTORS: *Phase studies, *Hydrogen, *Hafnium, *Thermodynamics, Vapor pressure, Temperature, Neutron diffraction analysis, Lattices, Chemical bonds.

Equilibrium vapor pressure measurements have been carried out as a function of composition for the hydrogen hafnium system in the temperature range 251 to 827° and up to a maximum pressure of one atmosphere. A partial phase diagram is presented.

PB 162 883 OTS $2.60

Massachusetts Inst. of Tech. Div. of [Sponsored Research] Cambridge, Mass.
NOTE OF RECOMMENDED VALUES FOR SOME THERMODYNAMIC PROPERTIES OF HYDROGEN PEROXIDE, by H. S. Mickley. Rept. no. 10 on Contract NOrd-9107. Sep 46, 29p. 23 refs. Rept. no. D.I.C. 6351.

DESCRIPTORS: *Hydrogen peroxide, *Thermodynamics Decomposition, Heat of reaction, Transition temperature.

The available heat of dilution and heat of decomposition data for aqueous hydrogen peroxide solutions have been reexamined. The data have been made internally consistent and the most probable values of the heat of dilution and heat of decomposition have been tabulated.

BM-RI-6057 OTS $3.60

Morgantown Coal Research Center, W. Va.
TRANSFER OF HEAT FROM HELIUM AT HIGH TEMPERATURES. PHYSICAL CHARACTERISTICS OF CERAMIC HEAT EXCHANGERS, by John J. S. Sebastian and Stanley C. Browning. 1962. 31p. 21 refs. NASA N62-16124.

RESEARCH METHODS, TECHNIQUES AND EQUIPMENT

PB 162 981 OTS $22.25

Computation Lab., Harvard U., Cambridge, Mass.
MATHEMATICAL LINGUISTICS AND AUTOMATIC TRANSLATION, by Anthony G. Oettinger. Jan 63, 443p. 6 refs. Rept. no. NSF-8.

DESCRIPTORS: *English language, Language, *Machine translation, Analysis, Programming (Computers).

This report describes the results of work on the syntax of English initiated almost two years ago and now proceeding in parallel with work on Russian. The present approach is a marked departure from earlier efforts both at Harvard and elsewhere in that it leads to all syntactic structures of a sentence that are compatible with the grammar describing the language, not merely to one. (See also AD 258 626)

SOCIAL SCIENCES

AD-289 462 OTS $11.50

Chicago U., Ill.
COMPARATIVE STUDIES OF CENTRAL PLACE SYSTEMS, by Brian J. L. Berry, H. G. Barnum and others. Final rept. on Contract Nonr-2121-18. Feb 62, 152p. 36 refs.

DESCRIPTORS: *Geography, *Population, *Sociometrics Illinois, Iowa, North Dakota, Commerce, *Economics, Urban areas, Rural areas

Contents:
Part 1. Retail location and consumer behavior
Part 2. Rural comparisons
Part 3. Central places within the metropolis
Part 4. Fundamental features of central place systems

PB 181 421 OTS $2.50

Office of Technical Services, Dept. of Commerce, Washington, D. C.
INDEX TO THE PATENT ABSTRACT SERIES. GOVERNMENT-OWNED INVENTIONS AVAILABLE FOR LICENSE THROUGH DECEMBER 1961. [1962] 205p. 20,000 refs.

DESCRIPTORS: United States government, *Inventions, *Patents, *Indexes.

Documentation

PB 162 654 OTS $8.10

Advanced Information Systems, Inc., Los Angeles, Calif.
SELF-ORGANIZING PROCESSORS. Final rept. on Organization of Large Files with Self-Organizing Capability, NSF Contract C162. Nov 62, 84p.

DESCRIPTORS: *Data processing systems, *Data storage systems, *Information retrieval, *Documentation, Classification, *Pattern recognition, Computer logic, *File cards, Coding, Computers.

The introduction reviews briefly the basic file concept on which this work is predicated and three problems related to the design of self-organizing systems. The two final sections of the report describe the two computer models, the bit processor, and the word processor that have been under development. These processors are designed as research tools for the investigation of automated storage and retrieval files. They are not intended to be implemented today nor are they meant to be final systems for tomorrow. Rather they are meant to act as test beds in which recent developments can be put together into systems and evaluated from their operation.

PB 162 980 OTS $4.60

American Inst. of Physics, New York.
INDEXING PHYSICS RESEARCH PAPERS, by Pauline Atherton. Feb 63, 48p. 6 refs. Rept. no. AIP/DRP 63-1.

DESCRIPTORS: Scientific research, *Physics, *Reports, *Subject indexing, Indexes, *Documentation.

There are certain common concepts which are included in all research papers. For example, the research was either experimental, theoretical, or both. Furthermore, each paper will refer to some property (or properties) of some object(s) determined by some method(s). The individual papers will emphasize one or more of these concepts over the other. It is obvious that the permutations of these concepts will each indicate a different emphasis and interest. These concepts can be analyzed and an index prepared which provides access to the paper from each concept. Such an index is constructed for three research papers and compared with existing indexes. (Author)

PB 162 979 OTS $3.60

Massachusetts Inst. of Tech. [Cambridge].
COMPARISON OF THE RESULTS OF BIBLIOGRAPHIC COUPLING AND ANALYTIC SUBJECT INDEXING, by M. M. Kessler. 28 Jan 63, 31p. 3 refs.

DESCRIPTORS: *Documentation, *Bibliographies, *Subject indexing, Physics, Periodicals, Statistical analysis, Correlation techniques

The papers in Vol. 112 of the Physical Review were processed by the method of Bibliographic Coupling (BC) and the results compared with those of Analytic Subject Indexing (ASI) as performed by the editors of the Physical Review. Groups formed by BC show high correlation with the verdict of the ASI method. Detailed results and numerical measures of this correlation are given. Groups formed by ASI correlate with those formed by BC more or less depending on the "logical size" of the ASI category. The verdict of ASI confirms that the coupling strength (n) of the BC method is a measure of strength of relatedness between pairs of papers. As n goes up the probability of relatedness by ASI also goes up. No consistent measure of strength of relatedness between pairs of papers could be found applicable to the ASI method. (Author)

MISCELLANEOUS

PB 181 413 OTS $1.25, $10/year

Naval Research Lab., Washington, D. C.
REPORT OF NRL PROGRESS. May 63.

DESCRIPTORS: *Naval research, *Scientific research, Vacuum apparatus, Radio chemistry, Atmospheric electricity, Stratus clouds, Chemistry, Plastics, Oils, Spectroscopy, Electricity, Power supplies, Batteries and components, Photoelastic materials, Mechanics, Pulse generators, Metallurgy, Ceramic materials, Titanium, Fractography, Boilers, Heat resistant metals, Silicon, Zone melting, Tin alloys, Aluminum alloys, Fatigue (Mechanics), Nuclear physics, Ferromagnetic materials, Cosmic rays, Supernovae, Mixers (Electronic), Reconnaissance satellites, Orbital trajectories, Programming languages, Dosimeters, Reports, Patents.

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